VOLUME XXXIII NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

JUNE, 1918

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PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

$2.50 A YEAR

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PRE NUMERO EXCELLENTIA

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IS INDIVIDUALLY TREATED

AND WATCHED WITH MINUTE CARE

DURING THE

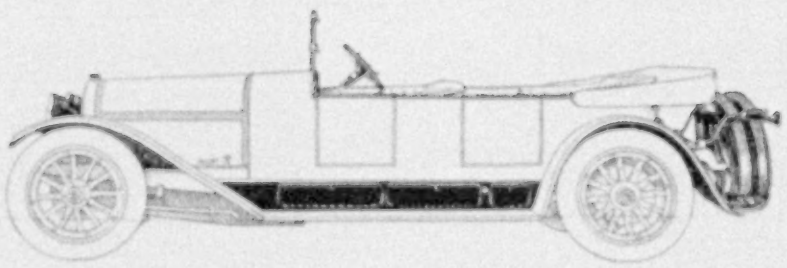
MANY ELABORATE PROCESSES

REQUIRED TO MAKE IT

THE LONG ESTABLISHED POLICY

OF LIMITED PRODUCTION GIVES

TIME FOR SUCH PAINSTAKING



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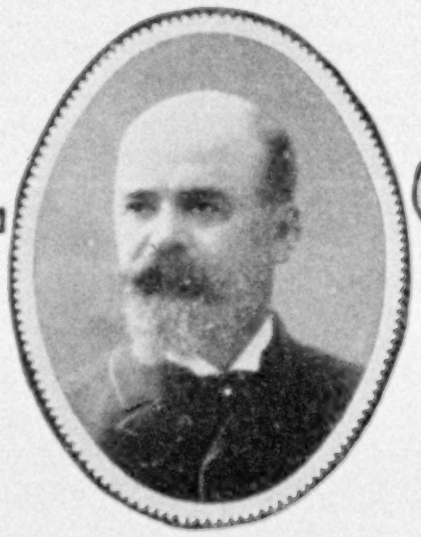

"Didn't sleep well last night? Tossed about from one side of the bed to the other, and heard the clock strike every hour, eh?

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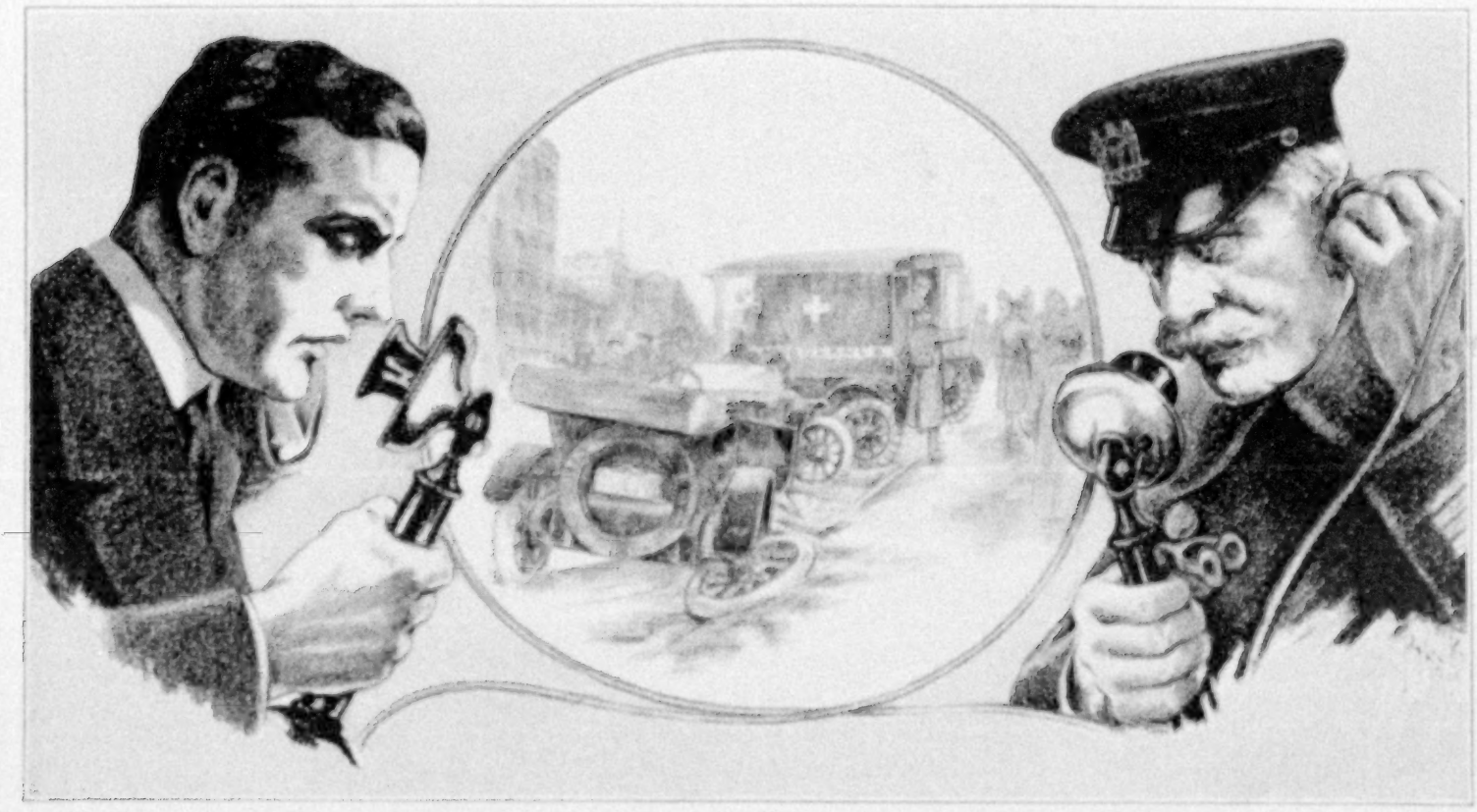

"What! My Car?"

"Yes! skidded—and it's up to you. You failed to provide the chauffeur with Tire Chains. Only good luck saved your wife from paying the supreme penalty for your negligence. She's on the way to the hospital painfully injured, but the doctor thinks she'll pull through. You'd better hurry to the hospital and then report to headquarters."

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Puffed Rice **Corn Puffs** **Puffed Wheat**

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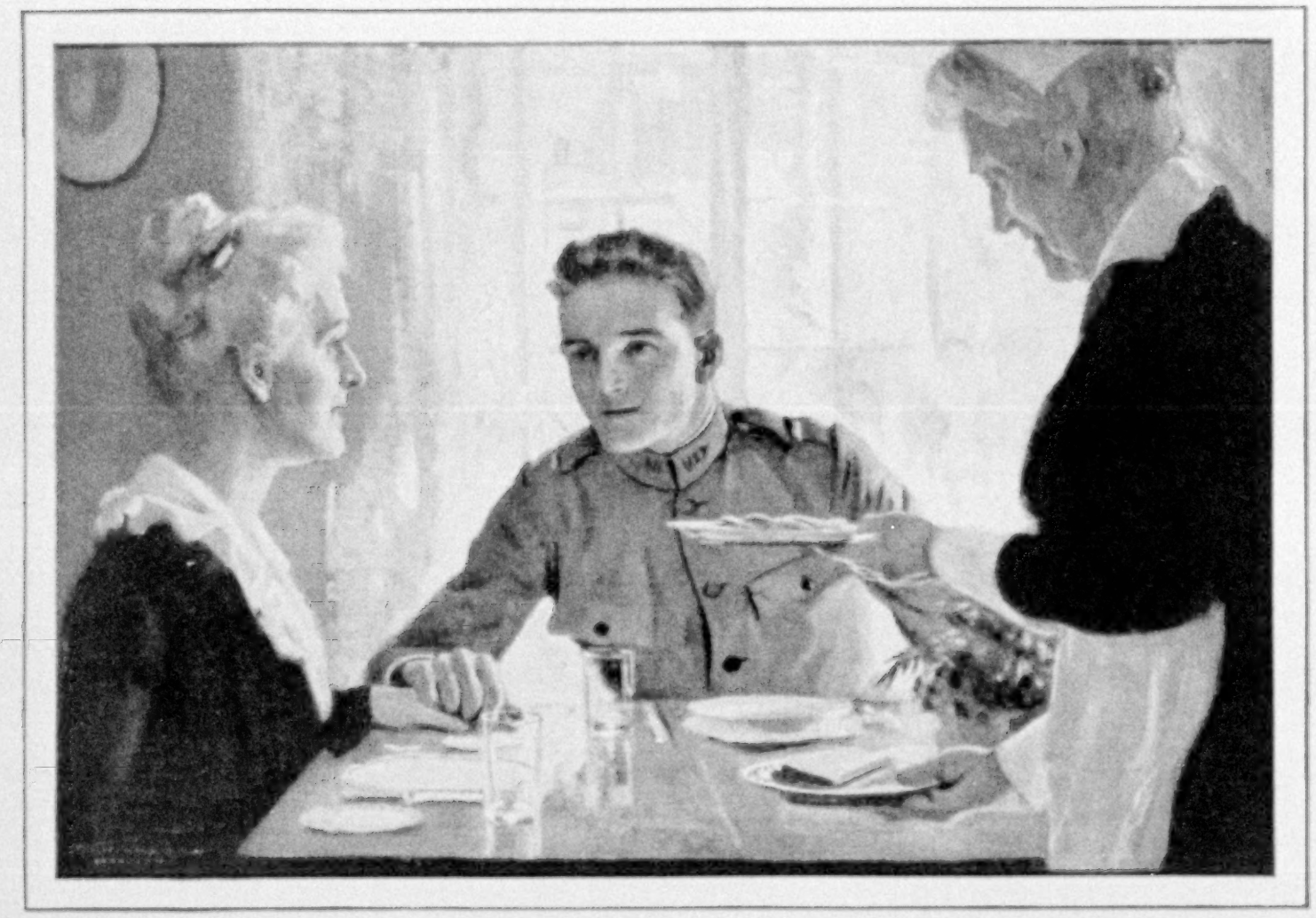

How he enjoys the home meal again

HOW delighted he is to be home—with his mother and old Mary making so much of him. They give him his favorite meal—the bacon he has loved from boyhood—and beam to see the relish with which he eats it.

It is Swift's Premium Bacon. His mother never served any other kind. She knows that this bacon has always the same even mixture of fat and lean, that cooks into almost-brittle curls of juiciness. She knows that only in Swift's Premium can she get that delicate, mellow flavor. For Swift's Premium Bacon is given a special cure that brings out all its deliciousness—until its very heart is mild, sweet and flavory.

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Swift's Premium Bacon

Comes in three convenient forms: in the strip; sliced in the box; or sliced in glass jars

"Mention the Geographic—It identifies you."

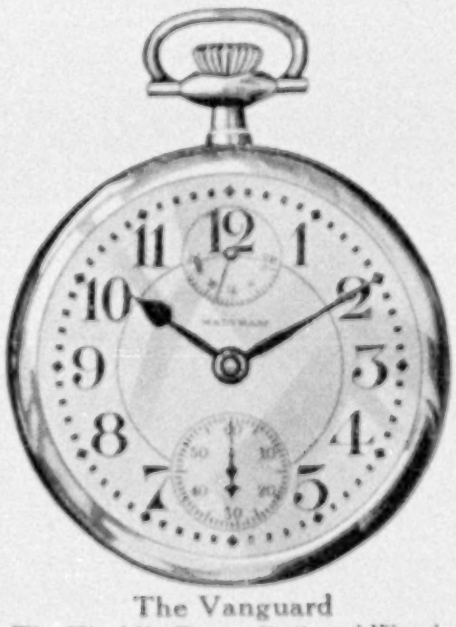
Why Japan came to Waltham for Time

Japan began to build a modern empire. About the same time, Waltham commenced the manufacture of watches. This happened more than a half century ago.

Japan sought for her own use the most modern ideas that civilization had developed. Waltham determined to improve on all that had ever been done to make watches accurate. Finally, their mutual aims toward perfection brought them together on a basis that has proved to the advantage of both.

Japan searched Switzerland, France, England and America for the most reliable railroad watch in the world. And the watch she chose in preference to all others was a Waltham.

Why Your Watch Selection should be a Waltham



The Vanguard
The World's Finest Railroad Watch
23 and 19 jewels

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Improvements such as these — recognized by horologists of five continents as inherently a part of the Waltham system of watch-making — are among the reasons why the greatest nations have proclaimed

WALTHAM

THE WORLD'S WATCH OVER TIME

Some National Achievements of 1917

A Statement by Franklin K. Lane, Secretary of the Interior

IN the every-day turmoil of preparing gigantically for a great world war, with some details here and there going wrong before the great machine is well oiled and running smoothly, we are very apt to get a clouded view of what in reality is being accomplished.

Therefore the question is pertinent—what did the country actually achieve in 1917?

A part of the answer lies in the record for the year in producing some of the essential resources with which I am familiar through the activities of the Department of the Interior.

Our three-quarters of a million coal miners produced 644,000,000 tons of coal, an increase of 54,000,000 tons over the previous year, notwithstanding transportation conditions in certain regions were worse than ever before in the industry.

In the production of petroleum we broke all previous records with an output of nearly 342,000,000 barrels, 14% greater than the former record output of nearly 301,000,000 barrels in 1916.

Of iron ore, the basis of all our guns and ships, and one of the most vital war needs, we produced over 75,000,000 gross tons; whereas our normal production has been about 55,000,000 tons.

We produced 640,000 tons of lead, an increase of 17,000 tons over 1916.

Of sulphuric acid we produced in 1617 (stated in terms of 60°B acid) 600,000 tons more than in 1916.

The increased outputs of these war-making materials show very clearly how faithful, how energetic, how patriotic has been the army of miners upon whose efforts depends our production of these vital supplies.

Certainly, in the accomplishment of the results I have recorded we have not been lax. We have met in a great way the great demands of an unprecedented situation. If the demands increase this year our efforts will also increase What we must achieve we shall.

Secretary of the Interior

★ ★ ★

The Hercules Powder Company is glad to give publicity to this statement by Secretary Lane. Our interest in the figures he cites is dual. They show graphically the steps which the Nation is taking toward victory. They have to do with a phase of the Country's industrial life with which we are very familiar.

Hercules Explosives have played and are playing a vital part in the production of the very resources which Mr. Lane mentions, resources essential for the winning of the war. Without the use of explosives it would be utterly impossible to mine the vast quantities of metals and minerals of which he speaks.

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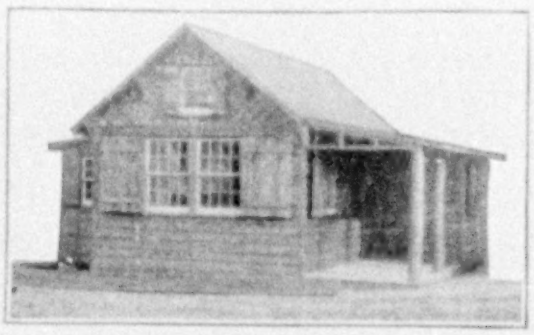

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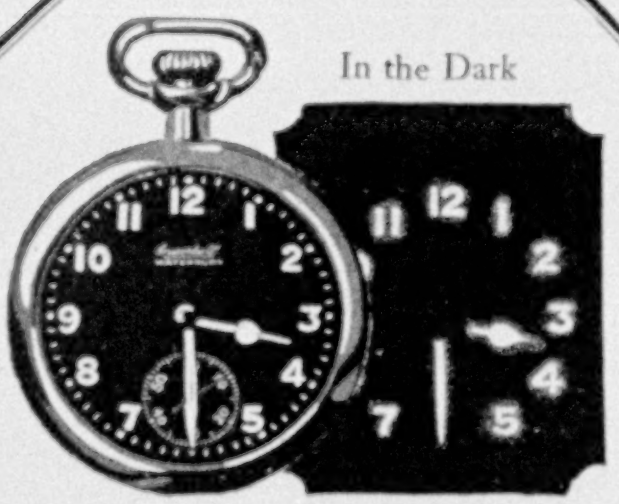

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ESTABLISHED 1865

Estacada, Oregon, August 15, 1917.

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Dear Ivory Soap People:

I want to tell you what a fairy godmother Ivory Soap has been in helping me to get ready for my vacation.

My rather small salary must meet the needs of Little Mother and myself and the upkeep of our small home, therefore a vacation trip means strict economy in planning clothes. Yet I do love to be fresh and dainty so here is where my fairy godmother waves her wand.

First my soiled crepe de chine waist went into a basin of warm Ivory suds, was rinsed, dried in a bath towel, carefully pressed, and came out as pretty as when it was new.

Then I sponged my last summer's suit with Ivory suds till it looked bright and fresh.

I had a pair of champagne colored pumps which were much soiled. Ivory paste cleaned them and new bows so transformed them that several have remarked, "What pretty slippers". Yet I had thought them quite beyond hope at the end of last season.

White silk gloves next received the magic touch and now came the question of transforming my black hat, which I had never liked, into something I should enjoy wearing. A thoro sponging with warm Ivory suds restored its glossiness and made the straw pliable so it was easily bent into another shape. Then I bought a white satin rose and tacked it on jauntily. When my city cousin saw it she said, "Your new hat is awfully cute".

That my hair might lie softly beneath the hat it received an Ivory shampoo. And when my suit case was packed, on the very top lay a new bar of Ivory, for even a fairy godmother must sometimes repeat her magic.

As I reflected happily on how much I owed to Ivory, the thought came to me that perhaps you might use some part of my experience with Ivory for one of your clever advertisements. If not, I shall at least have had the satisfaction of saying a thank you for the happiness Ivory added to my vacation.

Very sincerely yours,

EVA F. W——

VOL. XXXIII, No. 6 WASHINGTON JUNE, 1918

THE NATIONAL GEOGRAPHIC MAGAZINE

COOTIES AND COURAGE

By Herbert Corey

Author of "The Monastir Road," "Shopping Abroad for Our Army in France," "A Unique Republic," etc.

The "cootie" is not a pleasant topic to write, talk, or think about; but the seriousness of this menace to the health and comfort of our soldiers—a menace which scientists are exerting every effort to minimize—warrants the publication of Mr. Corey's unexaggerated account of the chief pest of all fighting men.

LAST night I heard laughter as I stumbled along a dark street in a dark village in northern France. I say "dark," but the word does not properly set forth the conditions. There was no moon and there were no stars. It had been raining and in a few minutes it would be raining again. The street had once been paved—about the time of the Roman occupation, perhaps—and a few rounded cobbles were still imbedded in a soggy mud that sucked at one's boot-soles as one walked.

No light came from the windows. One knew that inside the houses American soldiers were gathered about the candles, reading or "shooting craps," or wondering why the Y. M. C. A. was not performing total impossibilities in getting its chocolate-and-cigarette-laden trucks over roads that were gummed and cluttered with the camions of an army in movement.

The windows were curtained, so that not the slightest gleam escaped. In this part of France the peasants favor solid wooden shutters outside the windows, and inside the soldiers had tacked up blankets. Hostile airplanes are always on the hunt for villages in which soldiers may be bombed. This particular hamlet was within range of the Germans' big guns and no chances might be taken.

WHEN AN AMERICAN "OUTFIT" ENTERS A TOWN

Only those who have been lost in the midst of a forest on a rainy night can properly appreciate the utter blackness of that street. I ran head-on into a soldier.

"Visibility low," he remarked, in grimly humorous quotation from the report often made by the aërial observers.

The laughter came from the one room in which the officers of the headquarters company were bedded. I knew that room. In it the beds were laid so thickly on the rough brick floor that they overlapped like shingles on a roof. Only the man who slept next the door could get to his bed without walking over the beds of the other men. All others walked over his bed in going and coming. They were distinguished from each other by the names of the owners chalked on the dingy wall.

When an American "outfit" enters a town in which it has been newly billeted, it finds that the billeting officers have preceded it. Upon the doors of houses

Photograph by Herbert Corey

A TYPE OF DELOUSING MACHINE NOW IN USE FOR CLEANSING THE CLOTHING OF OUR AMERICAN TROOPS SUFFERING FROM THE COOTIE PEST

The cootie is a hardy insect; it takes boiling water to kill it and prevent its eggs from hatching. But hot baths and sanitary laundries are rare luxuries in northern France and these big tanks are a necessary part of the equipment of the American Expeditionary Forces.

XUM

or the gates of courts such legends as this are written:

"Company I, one officer and 12 men."

Inside that house or that court or that barn an officer and 12 men of Company I are free to find such accommodations as they may.

Sometimes the officer sleeps between sheets and sometimes the men roll in their blankets on clean, sweet-smelling hay. Sometimes the lodgings are more primitive. Not long ago I visited a major whose bed was only divided from the bed of the household pig by a board partition, ventilated by huge cracks. Another officer shared a room with a sick cow. In another house the chickens and the men roosted together. No one complained; for this is war.

It was in burlesque of these chalked billeting orders that on the walls of the bedroom of the headquarters company had been written the names of the bed owners.

THE TYPE OF AMERICAN OFFICER IN FRANCE

I know them well. They average 24 years old, for I took a census of their ages. One owns rich mines in Mexico. One says he will be elected sheriff in his county in central Tennessee when the war is over. Another was an officer in the Philippine constabulary and resigned his commission to get into the greater game. One is a six-foot-four youngster from a clean home in Nebraska. He does not speak of his home, but one can always tell. Another was a Kansas City newspaper man, and another had been in business in Milwaukee when we declared war.

That is the sort of men they are—clean, lively, energetic Americans. I wanted to know why they were laughing, so I fumbled my way to a dark door and through a black hall and lifted a blanket curtain and stepped in.

"Thus," some one was saying in a pompous, professorial way, "we observe, gentlemen of the class in entomology, that when confronted by danger even the humblest—I might say the most despicable—insect manifests a marvelous intelligence."

The members of the class were standing on each other's blankets. A youth who had left college to enter the army was giving an imitation of the instructor he had evaded by going to war. Two men were seated on the floor. "Signals" was picking "cooties" from the seams of his clothes and depositing them on a space that had been cleared. "Stokes" was embalming them in drops of grease from a guttering candle.

A dozen white blotches on the worn red bricks told of the success of the pursuit.

HEROES WITHOUT GLORY

Perhaps the reader thinks there is something repulsive and disgusting in this tale of clean-minded young Americans picking lice out of their clothing and killing them by drops from a burning candle. Perhaps there is. Perhaps my mentality has been warped by almost four years of war. To my mind the men who can do this and still laugh—bearing in mind their rearing and the clean years of their youth—are almost as nearly heroes as those who "hop over" when the whistle sounds the zero hour.

The ones are called upon to keep up their courage under a day-long and night-long degradation—a constant, crawling, loathsome irritation—while the others spend themselves freely in one fine burst. I cannot distinguish between brave men.

I call them "cooties" as the soldiers do, and for precisely the same reason that they nickname these minor, or are they major? horrors of war. Only the surgeons and the surgical orderlies and the men who run the steam cleaning machines come out bluntly with the word "louse." They are practical men. Their business is to deal with human ills and weaknesses, and they are habitually pressed for time. Their talk goes straight to the point, like a probe. The poor devils who are lousy always shy at the word.

"COOTIES," "TOTOS," "CODDLERS," "PANTS RABBITS," OR "SEAM SQUIRRELS"

The American soldiers speak of the pest as "cooties." The French fighter talks of "totos" and the British tell of "coddlers." They know it is not their fault that they are infested, but the effect of years of civilian training persists.

Photograph by Herbert Corey

OBSERVING THAT WHICH IS NEXT TO GODLINESS

And here is a group of the doughboys waiting for their clothing, which is being treated for cooties in the delousing machine. The machine (see pages 496, 500, and 503) kills the insects and destroys the fertility of the eggs by subjecting them to the heat of live steam.

Photograph by Herbert Corey

AN AMERICAN ROLLING KITCHEN ON ITS WAY TO THE FRONT ON A RAINY DAY

Each company of 250 men has a mess sergeant and four cooks. Each cook has two helpers and four kitchen police. The "K. P.s" are seen standing at the rear wheels. It is their duty to find the wood and water and do the rough work. Note the tin hat slung to the collar of one of the mules.

They still feel, against all reason, that there is something shameful in their state. They try to assume a joviality they do not feel, and call the things "pants rabbits" and "seam squirrels" and speak of "reading their shirts."

"I'll meet you this afternoon," a noncom once told me, "down at Cootie Park."

Cootie Park was the grassy bank of a streamlet on which the sun shone warm. In the meadow was a flock of sheep guarded by two alert dogs, while the bent old shepherd carried the weaker lambs in his arms. Now and then he blew upon a brass instrument — half whistle, half squeak—and the flock and dogs obeyed his summons.

The disciplined sheep interested the boys immensely, as they sat there bare to the waist in the sunshine, going over their seams. Two discussed the shepherd and the sheep:

"Sure," one said, "he can blow every order we've got in the manual of arms. Last night I was watching him, and when it came time to start home he whistled 'Eyes right,' and they did."

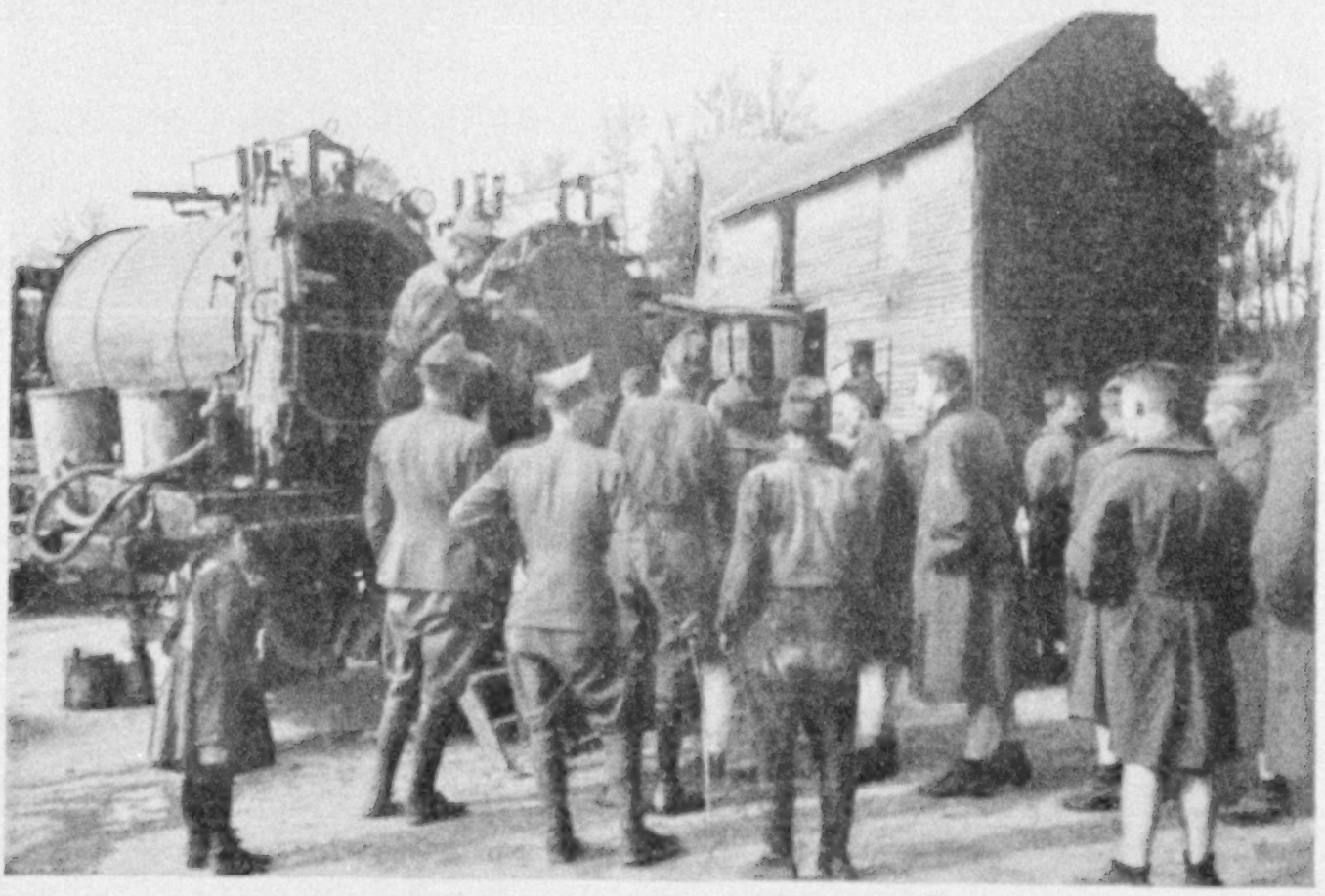
TRUE MORAL COURAGE NEEDED TO BEAR THIS PLAGUE

This is not a pleasant recital, if one thinks in civilian terms of the louse as loathsome and suspects that the men who suffer from this plague are in some way to blame. At the very best it cannot be pleasant. But lately, since my own people have come into the war, and because I know them best and talk their language, I have begun to realize the moral courage that is needed to bear this plague without whining.

Many a man has told me that to be under fire would be a trifle if he could but be clean. Mud and thirst and hunger and cold can be borne with equanimity, but the louse carries the suggestion of degradation. Yet that, too, is sustained bravely.

"I have only known one man who cried because of the plague," a surgeon once told me. "That man went into No Man's Land on reconnaissance at night in as commonplace fashion as though he were taking the tram for the office of a morning."

XUM



Photograph by Herbert Corey

THE DOUBLE-BARRELED COOTIE CANNON IN ACTION

American youths waiting around while their cootied clothes are being cooked. As an evidence of the stress which General Pershing puts on cleanliness, a cable from the front announces that razors are now being issued to the enlisted men of the American Expeditionary Forces. Clean faces are adjudged to be an element in morale. In addition to a razor of the safety type, together with extra blades as required, each man is issued a tooth-brush, comb, hair-brush, soap, and towels. This is the first time in the history of our army that razors have been issued.

"I don't mind the nights on guard in the front trench," many say, "because the nights are cold and 'they' are quiet. But I dread the coming of the day, when I must crawl back into my dugout and try to sleep and know that I shall have to lie awake and feel 'them' crawl. 'They' become a torture."

Practically all of the men in the advance areas are lousy, according to a document that is accepted as authoritative. It is impossible to tell what proportion of the men in the rear and along the lines of communication and in depots are infested.

It is probable that the men in the French armies suffer to a like extent, for the conditions under which they live are identical with those of the other armies.

During the formative period of the American army in France the men were able to keep fairly clean—only fairly—but with the opening of the year's activity they were set upon the same footing as their allies.

HOW THE SURGEONS WORK AFTER A GREAT BATTLE

The great fear of the military surgeons is the time following a battle, when the field hospitals and clearing stations are swamped by a flood of wounded men lying grimly silent upon their blood-soaked litters. Then the surgeons work in teams, each operator being accompanied by his ether specialist and his orderlies and nurses.

They go from table to table swathed in white, their instruments freshly cleaned and sterilized and glittering, their cotton

gloves white and new. Other men wheel in the tables on which the wounded lie and wheel them away again when the operation is completed.

The operators go on without pause, never asking after the fate of those who have been operated on, never looking ahead at the line of waiting tables, until exhaustion stops them.

TRENCH FEVER AND TYPHUS TRACED TO THE LOUSE

Such a gorge of hurt men is the thought that haunts the waking moments and the dreams at night of every surgeon at the front.

But such days are rare, while every day the louse must be fought. It carries with it the threat of epidemic. In the eastern field of war the louse is a typhus carrier, and there is no known reason why it shouldn't carry typhus in the west.

Trench fever has been traced home to it. Until a comparatively short time ago this was a mystery, with its recurrent chills and fever and the semi-paralysis that is an occasional result.

It is definitely known that a form of itch is to be charged against the louse, and a lowering of morale and a lessening of the power of resistance is certainly produced by it. In some cases men have been rendered so nervous by prolonged exposure to the irritation of the louse that they have been made unfit for duty.

THE RAT AND FLEA PESTS

There are other trench pests, of course. Perhaps one hears more of the trench rat, for sufferers from rats are almost morbidly candid in relating their experiences. Rats can be disposed of, however. Trenches can be policed into cleanliness and officers can enforce the rules against leaving bits of food about.

Without food rats cannot exist, and, being highly intelligent animals, they do not attempt life in sterile surroundings. They may be dogged and catted and trapped. At the most, the trench rat is little more than an annoyance.

He does run over the faces of sleeping men, and they waken their comrades to relate the fact. They discuss the odor of the rat's feet and the uncanny coldness of them. He eats leather shoe-strings and bridles and sometimes nibbles on boots.

The flea is the rat's partner, and bubonic and other plagues have been traced to the rat-borne flea. The trench rat habitually grows to an enormous and unprecedented size, so that a cat must have an heroic soul to tackle one of them unassisted, but I have yet to hear a substantiated story of a man being bitten by a trench rat, unless that rat was cornered.

Sometimes one encounters a humorist who tells his story:

"I met a rat one night in the trenches by Zee-bray," said one man. "On the level, he looked bigger than a Great Dane dog. I stood there like a gentleman and waited for him to give me the right of way, but when he didn't, I just took to the parapet and let him go by. Sure, the Germans were shooting, but I didn't care. I'd rather take a chance with a Boche than with a rat."

THE FLY IS DANGEROUS AT THE FRONT

There is an odd insect known as the "spring tail" and many sorts of flies. Ordinarily the fly is dangerous at the front in precisely the same manner in which flies are dangerous at home, because he contaminates food.

There is a biting fly, however, which is especially prevalent in regions where there has been long-continued fighting and where the contending forces have not had an opportunity to clean up the battlefields. A variety of blood-poisoning has been traced to the bite of this fly.

But of all the vermin of the trenches, the chief pest is the louse. He is unescapable and ever present.

The primary reason is that the men have only intermittent opportunities to clean up. Theoretically, of course, the men of all armies are washed and dried and newly underclothed once a fortnight. Sometimes glad-eyed optimists clean up their men once a week.

THE LIFE STORY OF THE LOUSE FAMILY

Even if that were possible, the louse would not be disposed of. He would manage to cling in the overlooked fold

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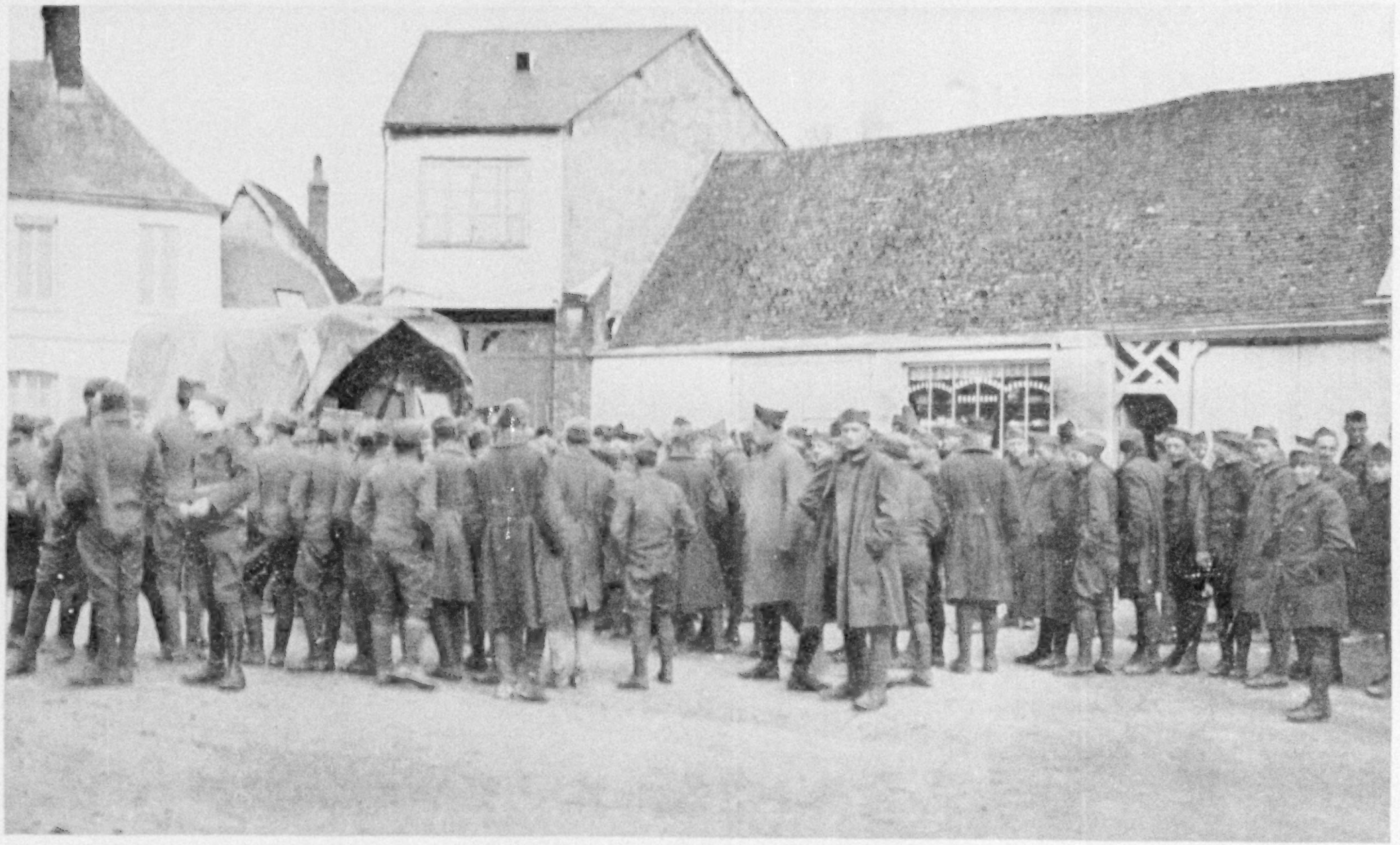

Photograph by Herbert Corey

PART OF A DOUBLE LINE OF MEN WAITING BEFORE A Y. M. C. A. TRUCK IN FRANCE FOR THE SALE OF CIGARETTES AND CHOCOLATES TO OPEN

The truck was two days behind time, because of road and other conditions, and the men had been chocolateless and cigaretteless for that time. The supplies are, of course, made available at the smallest possible cost. Tobacco is now being supplied to American soldiers as a part of the army rations.

Photograph by Herbert Corey

THE FRIEND-IN-NEED IN USE AT THE AMERICAN FRONT

Despite their discomfort and the disgust which they feel at being infested with vermin, a condition for which they are in no respect to blame, the American troops in France never whimper. With splendid fortitude they joke about that which cannot be helped. "I don't mind the hikes now," said one soldier, "for all I have to do is to sort of shoo my shirt along."

of a blanket or under the collar of an overcoat. And by and by romance would begin to sing in his blood, and he would meet a lady louse and set up housekeeping. Whereupon a whole cityful of younglings would appear, and the unfortunate who played the part of an unwitting host would go back to his moments of uneasiness during the day and his hours of sleeplessness at night.

But under army conditions the men are almost never given a chance to clean up so often.

Let me tell the story of the outfit I have been living with for the past few weeks, because that story is typical of a regiment which has had a fairly good opportunity to keep free of the pest.

For some weeks it had been kept in the trenches, one battalion at a time. The men "up front" had no chance at all to keep clean.

They did not even wash their faces. There is no water whatever in the trenches, except when there is too much water, none of which is fit for use. The little that comes to the men in line is carried in at night, in galvanized-iron containers, by the men who have been told off for that duty.

Usually the "carry" is a long one. One may say that it is practically never less than two miles, because of the German guns. The cans are unchancy things to handle, and only the water absolutely needed for drinking purposes is carried in.

DAYS AND NIGHTS IN THE TRENCHES

During their time in the trenches most of the men are on duty all night long. By day they are required to stay in the dugout, not only for the sleep they require, but to be out of sight of the enemy and out of danger from his bombs.

A dugout is, in nine cases out of ten, a mere dirt-roofed hole in the ground. Sometimes it is a luxurious one, with a board floor, on which the musty straw is piled. Sometimes an abundance of straw makes up for the lack of boards. Sometimes there is no straw.

It is rarely large enough to accommodate the men, and if it were large enough the chill of a damp hole, into which the sun never shines, forces them to lie spoon

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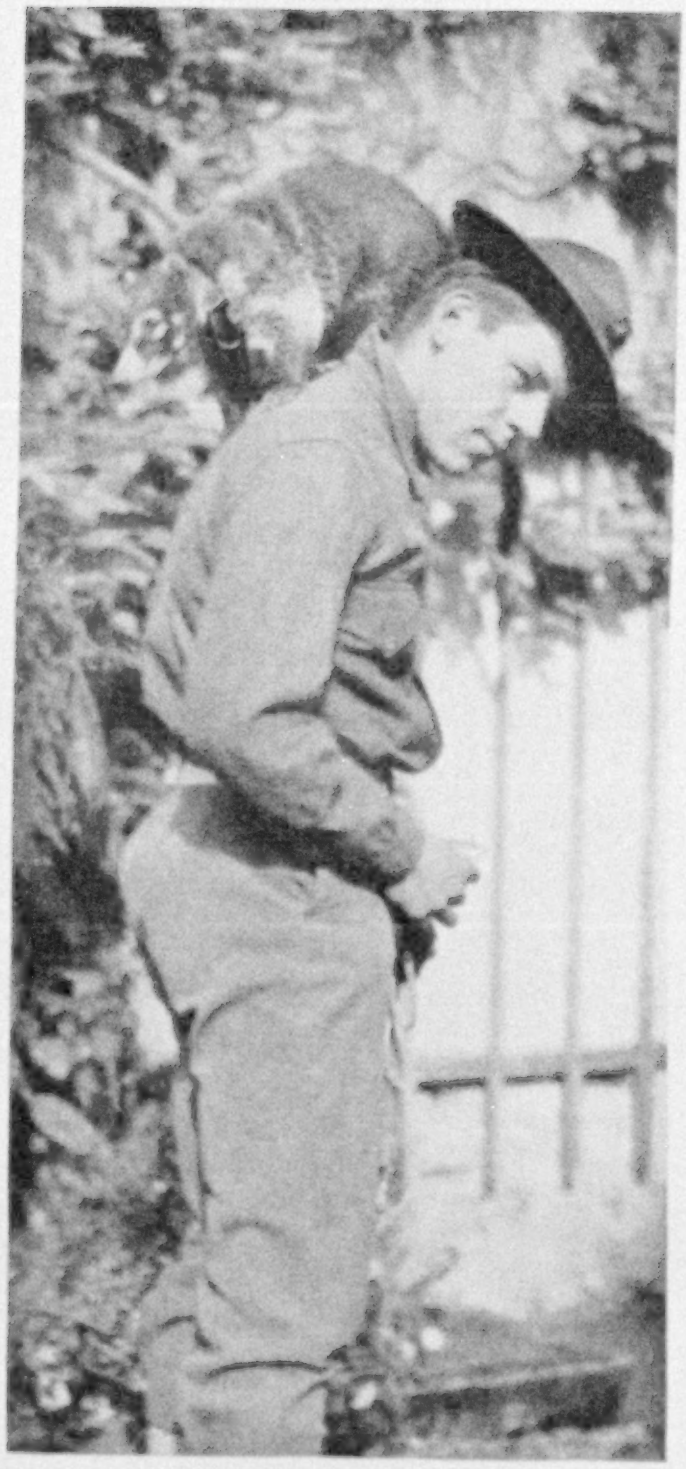

Photograph by Herbert Corey

THE MASCOT OF THE MARINES, WHO MADE HISTORY AND WON IMPERISHABLE GLORY AT CHATEAU-THIERRY

This ant-bear has accompanied the soldiers of the sea from the tropics to Picardy

fashion, each wrapped in his blanket, each seeking the warmth of the other man to add to his own comfort. It is ideally adapted for the furtherance of all insect plagues. No matter how scrupulously scrubbed a man may be when he enters a dugout, he usually comes out lousy.

When the regiment of which I speak left the trenches the men got a chance to clean up. Two days is always required for that—if not more—because the first day is spent in resting. The men are exhausted by the long hours and the scant sleep and the nervous tension under which they have been living.

The officers saw to it that each man bathed and each man was given a fresh suit of underwear. Then the "replacements" came.

THE "REPLACEMENT" MAN A COOTIE DANGER SOURCE

A "replacement" is a man sent to a unit to take the place of one of the men the unit has lost. No matter from whence he comes, in a properly handled regiment he first goes into quarantine. A surgeon looks him over, to see that he is not suffering from a contagious disease. Then he is examined for "cooties."

If he has them he is sent to the guardhouse and kept there, not as a punishment, but to be sure that he does not spread his pests among other men, until he in turn can be bathed and newly outfitted.

"Tomorrow we hike" was the word after dinner one night.

The regiment got under way at two o'clock in the morning, and for two weeks each day was too full to permit of proper cleanliness. Sometimes we hiked. Sometimes the day's program called for close-order drill, or special instruction for almost every available hour.

BATHING AN ORDEAL IN NORTHERN FRANCE

There were no moments left for bathing, and if there were, a bath in the cold water of the streams of northern France presents slight attractions to the man who has worked hard. There is always the hope that tomorrow may be a better day.

At last we reached a billet which was to be permanent for at least two weeks. It was only by diplomacy and unflagging industry that enough wood was found to keep the fires going in the rolling kitchens.

Hereabouts the peasants cook over fires that might almost be covered by a pocket handkerchief. As fast as the end burns

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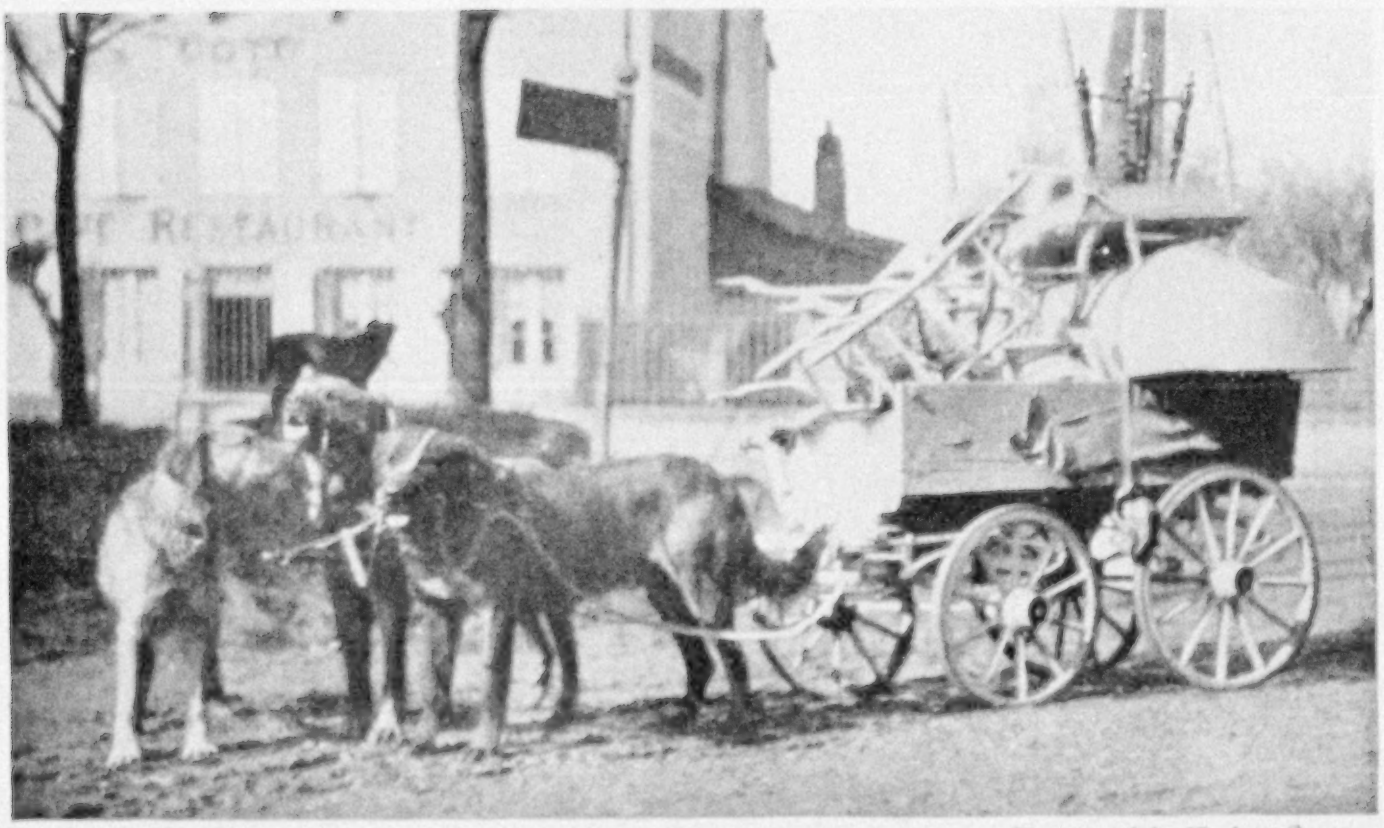

Photograph by Herbert Corey

HOW THE REFUGEES LEAVE A DEVASTATED TOWN IN FRANCE

A tiny dog-cart, piled high with odds and ends of household furniture, represents all the possessions saved by a peasant family which must start life anew in some distant section of France. So suddenly does the order of evacuation come that the civilian population seldom has time to make a choice of the things which can be saved.

off, the sticks are moved forward to present a fresh surface to the flames. The fires are all made of little twigs. Each year the peasants lop off the branches of certain trees and make them up into bundles for the winter's fuel. The season's provision for a farming family is unbelievably small.

"There are enough stumps in my old man's woodlot to boil soup for all France," a disgusted soldier told me one day.

"Cooties" can be killed by boiling water, if the water is hot enough and boiled long enough. The women of France rarely use hot water for the washing of clothes.

THE COOTIE IS A HARDY INSECT

In every village in the north there is a municipal laundry, in which the women kneel and souse the soiled linen in cold water which trickles into a tub, and then thresh the linen upon rough stones. The process is repeated until the cloth takes on at least the appearance of whiteness.

But this process does not kill the "cooties." The adult cootie is a fairly hardy insect and the eggs are extraordinarily resistant to rough treatment. The scientists who have been inquiring into the louse problem among the armies of the Western Front have found that clean clothes may be infested from these community wash-houses. The eggs remain upon the rough surfaces of the stones on which the linen is scoured and are taken up by the next armful of wet clothes.

If the scientists had their way they would either have the clothes of the soldiers washed by army specialists or by the soldiers themselves. They would forbid the men taking their clothes to the village *blanchisseuses*.

But the American soldier is a luxurious creature and has money in his pocket. He prefers to have his laundry done by the women, and he can hardly be blamed. If he were to do his own week's wash, he would be forced to do it at the same place and on the same stones over which the peasant laundresses work each day.

When there is no hot water to wash the men's clothing there is no hot water in which the men themselves may bathe. It is true that one sometimes finds a mu-

Photograph by Herbert Corey

THE SMALLER FRENCH VILLAGES ARE SERVED BY TRAVELING STORES OF THE SORT SHOWN HERE

Every necessity of French rural life is carried in them, from cap ribbons to plow-points. The American soldiers are looking for something to buy, for they have plenty of money in their pockets, but the contents of the traveling store rarely appeal to their tastes.

nicipal bath-house in the tiniest villages, but ordinarily the men are obliged to take their baths at the edge of a stream. Even when quarters are established for a stay of some time, it is not always possible to make better arrangements.

HOW THE BRITISH FIGHT THE COOTIE

The British take notably good care of their men in this respect, yet I found only a cold-water shower at a school for officers last winter. The water could not be heated, and so the Britons went under the splash and came out even pinker than when they went in. It sends a chill down my sensitive spine even yet to think about it.

"I got a hot bath yesterday," said the colonel's orderly. He was so extremely set up over it that I asked for details. He had built a small fire between bricks, fed it with bits of twigs he had collected and little parcels of straw and other odds and ends, and heated water in the cup of his canteen and used his mess tin as a bathtub.

Many cups of water were heated and he had bathed himself by fractional parts. But in the end he was entirely clean.

Not many men will go to such trouble, however, and in fact he secured an esthetic rather than a sanitary satisfaction from the process; for he had no way in which his clothes might be boiled.

In the month of which I am writing only a few lucky men of this regiment had hot baths. This includes the officers as well as the private soldiers. The men did what they could by cold-water baths and cold-water laundering to keep the pests down, and they have been aided by the insect powder which is distributed from time to time. Unfortunately it has not always been possible to get a sufficient quantity of that insect powder, because of conditions into which it is unnecessary to go.

A GASOLINE SPONGE-BATH FOR WRITHING SOLDIERS

If ninety-nine out of every one hundred men were absolutely free from "cooties," the hundredth man would infest the ninety-nine in a week's time under military conditions.

Sometimes unusual methods are resorted to. In a regiment largely made up of national guardsmen the hospital order-

lies took charge of one platoon which, through no fault of its own, had become infested.

At that billet there happened to be plenty of gasoline—a condition which rarely exists nowadays. The hospital man managed to commandeer a quantity. Then the men stripped and their clothes were literally soaked with gasoline.

An unusual spectacle followed. The hospital orderlies armed themselves with swabs tied to the ends of sticks. They dipped the swabs in open cans of gasoline. Then they swabbed the men.

"Ouch!" was the first remark made by each man as the gasoline filtered into the raw places where he had been scratching himself. He rarely paused with that exclamation; but the hospital crew was relentless.

"Stand up," they said sternly. "Whoa!"

It developed that they had immediately before been swabbing horses with gasoline for the same purpose and the words came naturally to their lips. The poor men being swabbed danced and swore, but they had to submit, for an under-officer supervised the process.

Physicians tell me that it is not at all certain that gasoline will kill the nits of lice, but the hospital orderlies had no doubt whatever as to the efficacy of their process. They manifested an artistic satisfaction in the swabbing, so that not a single nesting place in which eggs might be hidden was overlooked.

Later I asked the men who had been swabbed what the result had been.

"Fine," they said, their faces glowing. "It's a bully hunch. We're going to swipe some gasoline and go over ourselves now and then. It sure does kill the 'cooties.'"

HOW THE COOTIE STARTED

No army in the European field has a preëminence in cleanliness over any other army. The most that can be said is that some armies are worse than others.

It is assumed by those who have inquired into the subject that the louse obtained his foothold in the early days of mobilization, when Apaches from the slums and ruffians from the docks were herded into barracks along with men who had never known what it was to be anything but clean. So the louse spread and propagated until now its diffusion is general.

If every man and every stitch of cloth in every army were to be thoroughly freed from the pest today, in a week each man might be infested again. Enough "cooties" would be left over in unsuspected places to make a fresh start.

With all Germany's boasted ability to organize, the louse has fairly ravaged her armies. In the latter months of 1914 I visited a great prison camp near Berlin, in which 9,000 military prisoners of war were herded behind a high wire fence. They had no hot water and no soap and no bathing facilities. Those who wished might wash themselves in an iron trough, such as horses are watered at, which stood in the bleak openness of the prison parade ground.

FIGHTING THE PEST IN GERMAN PRISON CAMPS

Only those who have felt the moist cold of Germany penetrate through wool and fur to the very bone can realize the sturdy courage of the men who went to that horse trough day after day and did their heroic best to keep themselves clean.

Others sat in long rows on the paillasses of dirty straw in the cavalry stable tents which sheltered them, naked to the waist, while they attempted to kill the plagues that were driving them mad.

That was in 1914. I often wonder what has become of those men—if they have had the courage to live on amid such infernal torture.

The German armies were infested, so that one of the most popular charities in the Empire was the "Delousing Fund," which furnished various insecticidal compounds to the men at the front.

The Russian prisoners were infested to the last man—infested to a degree that no one unacquainted with army conditions would believe if I were to tell the unvarnished story—and through their plague brought the spotted fever to Germany in 1915. The Russians themselves were fairly immune, but it is said to have cost the Central Empires many lives before it was conquered.

Nowadays it is realized by the scientists who have given their time and

Photograph by Herbert Corey

AMERICAN AND FRENCH SOLDIERS PAYING A SILENT TRIBUTE TO THE AMERICAN DEAD

The flags which float above these newly made graves are the tribute of the Americans; the wreaths are the homage of their French companions

their blood to a study of the problem, that a high degree of heat and rigorous cleanliness are the only means by which the plague can be successfully fought.

N C I POWDER USED IN WAR ON THE BEASTIE

The N C I powder, supplied to all the armies, will free the men from the beastie if they have some little chance to keep clean while they are using it. One application is considered good for five days. It is made up of naphthalene, 96 per cent; creosote, 2 per cent; and iodoform, 2 per cent. It would not be favored in civilian circles, because the user of N C I advertises that fact to the most casual passer; but it does the work.

Another objection to N C I is that it causes severe smarting if used in large quantities; but the men seem not to object to that. The soldier who is thoroughly inured to war seems to care little for bodily pain. I have seen men at hard work whose slight wounds had been only partially healed, so that each movement must have been productive of pain.

The Englishman, if asked about it, grins and says that he must "carry on." The American says: "We've got to get through with it." The Frenchman assures you that it makes no difference to him.

There are other treatments. One is a vermijelli ointment, with which the men smear themselves almost from head to foot. A preparation of crude oil and soft paraffin melted together sets like a salve and is very useful when similarly used. A mercury ointment is likewise employed with success, but all these are merely temporary expedients.

It is when the men come into rest camps that the "cootie" is properly handled. Heat and hot water give temporary relief from the scourge. The method usually followed is that of the British army.

THE DELOUSING ESTABLISHMENT

The men enter the first room of a three-room bathing establishment. There they undress and hand their soiled clothes through a window to a receiver, who sends the bundle to the "delousing machine."

They pass into the middle room and take a thorough bath with plenty of soap

and plenty of hot water. A non-com is at hand to see to it that the occasional man who objects to cleanliness nevertheless follows the example of the others.

Then they move into the third room, dry themselves and put on clean clothes. These may not fit, but they are clean. The shirts, socks, and undergarments have been subjected to 215 degrees of heat in live steam for three-quarters of an hour, or sometimes are boiled for five minutes. The outer garments are thoroughly brushed and then ironed with a very hot iron down every seam and in every possible hiding place for the "cootie," or the eggs.

LOUSE HABITS DURING THE WAR

When it is not possible to arrange permanent cleaning-up establishments of this sort, the men are made to bathe as best they can, and their inner garments are steamed in huge horse or motor drawn "delousers," which hang about the rear of every army nowadays. Absolute cleanliness is not secured, but the evil is greatly reduced.

"The plague may at least be reduced to a minimum," remarks an English authority. "It is not so much a matter of pure science as of common-sense management."

Some interesting facts have been revealed by the scientists who have made an examination of louse habits during the war. One is that dugouts and buildings are never infested. The cold straw and the damp walls do not present any attractions to the bug. He does not even stay upon blankets any longer than is necessary. His home is in clothing that is being worn and from which he ventures to feed.

In an official document it is stated that in the British army 95 per cent of men who have seen six months' service are lousy; that the average number of lice per man is 20, and that 50 men to a battalion of 1,000 are dangerous carriers, each bearing from 100 to 300 lice.

A HIGH-RECORD SHIRT

One shirt was found to contain 10,428 lice, and more than 10,000 eggs were found under the microscope. This probably establishes the world's highest record, although nurses who served through the typhus epidemic in Serbia in 1915 told me that they had seen gray patches the size of one's two hands upon the bodies of men brought into the hospital. The pests were so thick in these patches that from a little distance they presented the appearance of a felted cloth.

The beast seems to lack intelligence, however, for in all the experiments no deliberate effort on his part to reach the human body has been observed. He is a creature of opportunity and environment. Eggs have been hatched after a dormancy away from the human body of forty days, and single insects have lived and flourished on good feeding grounds for thirty days; but the longest period in which any survived separation from its human host was nine days.

NO ARMY IS CLEANER THAN AMERICA'S

Every effort is being made to keep the men of the American army free from "cooties," for the American surgeons and officers fully realize the danger that may be carried by the pests. During the early months of our army in France the French baths and the English delousing machines were used, but now we are getting baths and machines of our own.

Clean underwear is furnished the men at every opportunity, and they are given every possible insecticidal device, from the "cootie bags" of the French to the "navvy's butter" of the British. It is not too much to say that no army is cleaner than the American.

The fact that most impresses the observer, however, is the cheerful courage with which the American soldier is bearing this, as he is bearing every other danger and discomfort of the war. By preference he disguises his repugnance with a rough form of humor.

One man told me, as he left the trenches after a two weeks' stay, that he had "little cooties" feeding on the "big cooties" now, and another said he didn't mind the hikes, because "all I had to do was to sort of shoo my clothing along." They never whine. They say they have "cootied" or they have not and do not add a comment.

Perhaps that is not the courage that seeks a fleeting glory in the cannon's mouth, but it seems to me it is a fine courage just the same.

XUM

HOSPITAL HEROES CONVICT THE "COOTIE"

IT WOULD be highly appropriate if the United States Government were to confer a special decoration upon sixty-six young American soldiers who have displayed unspectacular, but unsurpassed, courage in France, a courage that dared wasting illness, in a hospital subject to the bombardment of Hun shells, in order that future millions who are to make their way from our shores to the battle front may be spared the suffering and the disabilities of trench fever.

The courage which these sixty-six boys have evinced differs greatly from that induced by the battle call which sends men shouting "over the top." In volunteering to undergo tests which have identified trench fever as a germ disease they knew what they were facing—months, perhaps a year, of illness, of voluntary imprisonment in a hospital ward, of removal from all the activities and the excitement of the soldier's life in a foreign land, and from the companionship of comrades in arms. They were, necessarily, men in perfect health, many of them wholly unaccustomed to, and therefore dreading, the strangeness of hospital wards, of surgeons, of medicines, of blood injections, etc.

THE INOCULATION TESTS

The knowledge which these heroic sixty-six, by offering up their virile bodies to a disease test, have enabled science to acquire may prove the determining factor in the world war, for it may mean the conquest of trench fever, just as the sacrifices of a smaller group of men 18 years ago enabled Walter Reed and his associates to identify the mosquito as the insect which carries yellow fever. Once the source of the contagion was discovered the fight against yellow fever was more than half won.

The experiments conducted on America's Sixty-six have fastened the guilt of contagion-bearing upon the body louse, the "cootie," of which Mr. Corey writes in the preceding pages.

The first question studied was whether this was a germ disease. No germs could be seen with the microscope, but the U. S. Medical Department knew that there are numerous germs which cannot be seen by even the most powerful magnification. Therefore this point had to be established by taking blood from men with the fever and injecting it into healthy men. Out of 34 such individuals inoculated with blood, or some constituent thereof, taken from seven cases of trench fever, 23 volunteers developed the disease. Out of 16 healthy men inoculated with whole blood from a trench-fever case, 15 developed the disease. These experiments proved that trench fever is a germ disease, and that the germs live in the blood of men so infected.

LEARNING HOW THE DISEASE IS SPREAD

The next question was, "How is this disease spread?" Naturally, the body louse was to be considered first. Large numbers of these were collected from patients with trench fever, and also some of the same kind were brought from England, having been collected from healthy men. The lice from trench-fever cases were allowed to bite 22 men. Twelve of these later developed the disease, while four men bitten by lice from healthy men remained free from the disease. Eight other volunteers, living under exactly the same conditions, in the same wards, but kept free from lice, did not develop trench fever. After blood inoculation the disease developed in from 5 to 20 days. After being bitten by infected lice the fever required from 15 to 35 days to develop.

With such data in their possession, the medical departments of the Allies have taken up the problem of the "cootie" in its bearing upon the supreme question of winning the war. Until recently the odious vermin have been considered only in the light of bodily annoyances to the troops, in some cases having a certain effect on their morale. Now, however, the battle is on in earnest to rid the men of the disease-bearers, for when a man falls a victim to trench fever he is, in the average case, unfit as a fighter for six months.

It is a simple problem in multiplication to appreciate how tremendously America's Sixty-six may have contributed to the power of our blows against the Huns by giving science the information which will result in keeping our soldiers fit for service.

XUM

A BATTLE-GROUND OF NATURE: THE ATLANTIC SEABOARD

By John Oliver La Gorce

Author of "Roumania and Its Rubicon," "The Warfare on Our Eastern Coast," etc.

THE operations of the sea assassins of Prussia on our eastern coast, in a futile effort to stay the mighty blow America is beginning to strike against despotism, brings into bold relief that ever-changing stretch of coastline we so proudly call our Atlantic seaboard, which the writer outlined in an article published in the September, 1915, issue of the Geographic.

As the crow flies, it is some sixteen hundred miles from the out-harbor waters of Eastport, Maine, to the key-guarded shallows of Cards Sound, Florida; but as the shore stretches southward, miles lengthen into leagues, rocky citadels give way to shifting sands, and both yield place to coral reefs.

He who would follow the foreshore from northern Campobello Island to southern Largo Key has a journey that while taxing his legs would certainly stir his soul, for in doing so he would traverse the length of a battle-front in the most ancient, the most far-flung, the most unremitting, uncompromising war ever staged between puissant forces of nature—the war between land and water, with the wind as a shifting ally.

This warfare, harsh in its local results, is yet one that by its analogies has comfort for suffering humanity in the present hours of stress and crisis, for the final results, however serious the momentary aspects, are beneficial to mankind.

Before visiting the various sectors of the seaboard battle-front to study the more intimate details of the war between the sea and the soil, let us endeavor to get a bird's-eye view of the great conflict that started long before man appeared upon the face of the earth, and which can only end long after the planet is no longer fit for his habitation.

Every coast-line on the globe, be it that of a great continent or a tiny island, is a theater of nature's struggle, in which the warring forces are marshaled; every rainstorm is a vast squadron of airplanes of the sea, a veritable Neptune's Escadrille, sweeping the shock troops across the No Man's Land of cliff, beach, and reef, onward to the very heart of the land forces' strongholds, the mountains, where they wheel about and launch a rear attack with swollen torrent, hail, and ice.

Each drop of water is indeed a soldier of the sea, doing its small part, as it descends with force, in conquering the hillside, and its drum fire is to be reckoned with, because each inch of rain brings down one hundred and thirteen tons of water upon every acre of terrain upon which it falls.

THE AIR FLEETS OF THE SEA

As the tiny soldiers concentrate first in rivulet regiments, then into mountain-torrent divisions, and finally into big-river armies, they madly charge the rocks and grind them to dust by attrition and carry the captive sands ever onward to the sea.

The vast forces of the sea which are sent out in air fleets beggar belief. The rainfall of the United States perhaps averages 30 inches a year. On that basis every acre of ground is attacked by three thousand tons of water. And the water armies, marching back to the sea as rivers, take along a hostage of well-nigh unbelievable proportions, since it has been estimated that they carry some twenty-five billion tons of captive material with them.

The prisoners of the Mississippi might be used for an example, because their aggregate volume is greater every year than the total amount of material removed from the Panama Canal from the hour de Lesseps turned the first sod to the glorious day Goethals pronounced it a finished undertaking, or approximately 506,000,000 tons!

It often happens, however, that the seemingly vanquished turn on their cap-

Photograph by Charles A. Harbaugh

A BELGIUM IN NATURE'S WARFARE: WOUNDED, BUT UNBOWED

tors just as they come down to the dead line of No Man's Land and succeed in saving themselves from the prison camps of the sea bottom.

In such cases they form themselves into river deltas, like those of the Mississippi, the Po, the Euphrates, and the Ganges, although our own seaboard captives are not so fortunate, since deltas are conspicuously absent from the river mouths of the North American Atlantic and Pacific coasts.

In the attacks of the sea upon the land via the air, it is the constant endeavor of the water forces to bring the whole dry land area under its liquid fist. If the sea ever succeeded in its program of world dominion, which includes dragging every mountain down and filling up every ocean trench with the material graded from the land in a leveling process, there would be a universal ocean nearly two miles deep over the face of the globe.

WATER'S ALLIES IN ITS AIR ATTACKS

The water has as allies ice and atmosphere in its air attacks upon the land. Seeking out the fissures in a cliff and filling them, the water waits until the frost comes and forms ice.

No giant of any age, no superman, imagined or real, ever put his shoulders against an object with such smashing invincibility as is evidenced in the forming crystals of a piece of ice, while the air, elusive, unsubstantial, as it may seem when compared with water, is yet no mean confederate, because with its power to attack through chemical transformation and its extreme mobility, it can work important results even in a brief campaign.

Yet more to the immediate point of this discussion is the frontal attack of the sea against the land. With wave and tide and wind and undertow, with coastwise current and ground swell, the sea pounds perpetually at the gates of the land fortifications.

Starting at Eastport, Maine, let us take a mental journey along the battle-front and watch the great drive of the sea and the defensive tactics of the land. On the northwestern shore of Campobello Island, that beautiful bit of British ground which forms the seaward wall of Eastport harbor, stands "Old Friar," a remarkable rock, isolated and solitary, alone with its memories of a bygone day.

It is but a different version of the "battle" rocks that dot the granite fortifications for many weary miles on this coast. These sturdy sentinels are isolated forces which have withstood the buffeting of the foe's advance and are the outposts of the land legionaries in their mortal combat with the wave army that sweeps the coast in relentless fury. Their supporting forces have fallen back, the watery foe has entirely surrounded them, yet boldly they defy his onrush and present an inspirational picture of adamantine resistance, as they break up the assault of the succeeding waves that rush against the main defenses.

Enduring, inflexible, they continue to hold where their weaker brethren yield territory inch by inch. No Ten Thousand Immortals, no Guard Regiments, no Macedonian phalanx, ever stood their ground more nobly than do the pulpit rocks of the Maine coast.

THE BATTLEMENTS OF THE MAINE COAST

We have not traveled far when we discover that the Maine coast is an unbroken series of steep battlements. Without power to advance, without mobility to shift their positions, these cliffs are destined to a defensive plan of campaign, while the waves possess initiative, and their generalship is of no mean order.

Breaking relentlessly upon the eternal rocks, the waters might still wage a vain war, did they not succeed in capturing from the cliffs stones and boulders which they use as projectiles when they return to the attack. Here hard, ungrained granite armor-plate stands in the path of the onrushing waves, with such undaunted and unconquerable strength that, smash as they will, hammer as they may, the waves retreat after their attack, powerless to entirely reduce the defenses.

Farther along is another great mass of similar material, and it stands with corresponding might against the sea. But between them there is a series of cliffs made up of softer rock—the old men and the young boys of the land forces. Their morale is not high, their strength is not great, and so they give ground.

The flanks hold, but the center yields,

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Photograph from R. H. Newcomb

"THEY SHALL NOT PASS"

Artillery of the sea shelling a Verdun of the shore: Pulpit Rock, Nahant, Massachusetts

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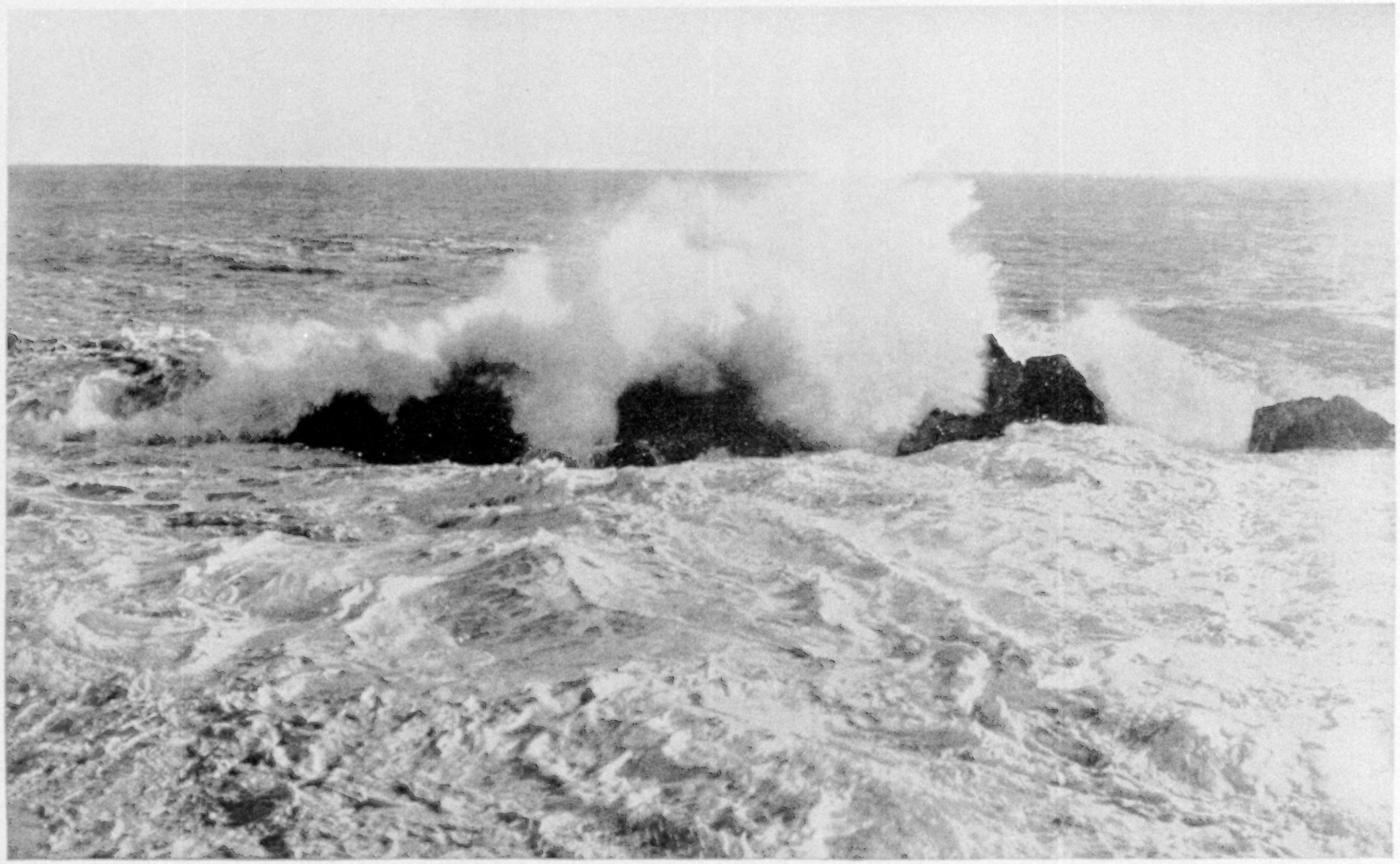
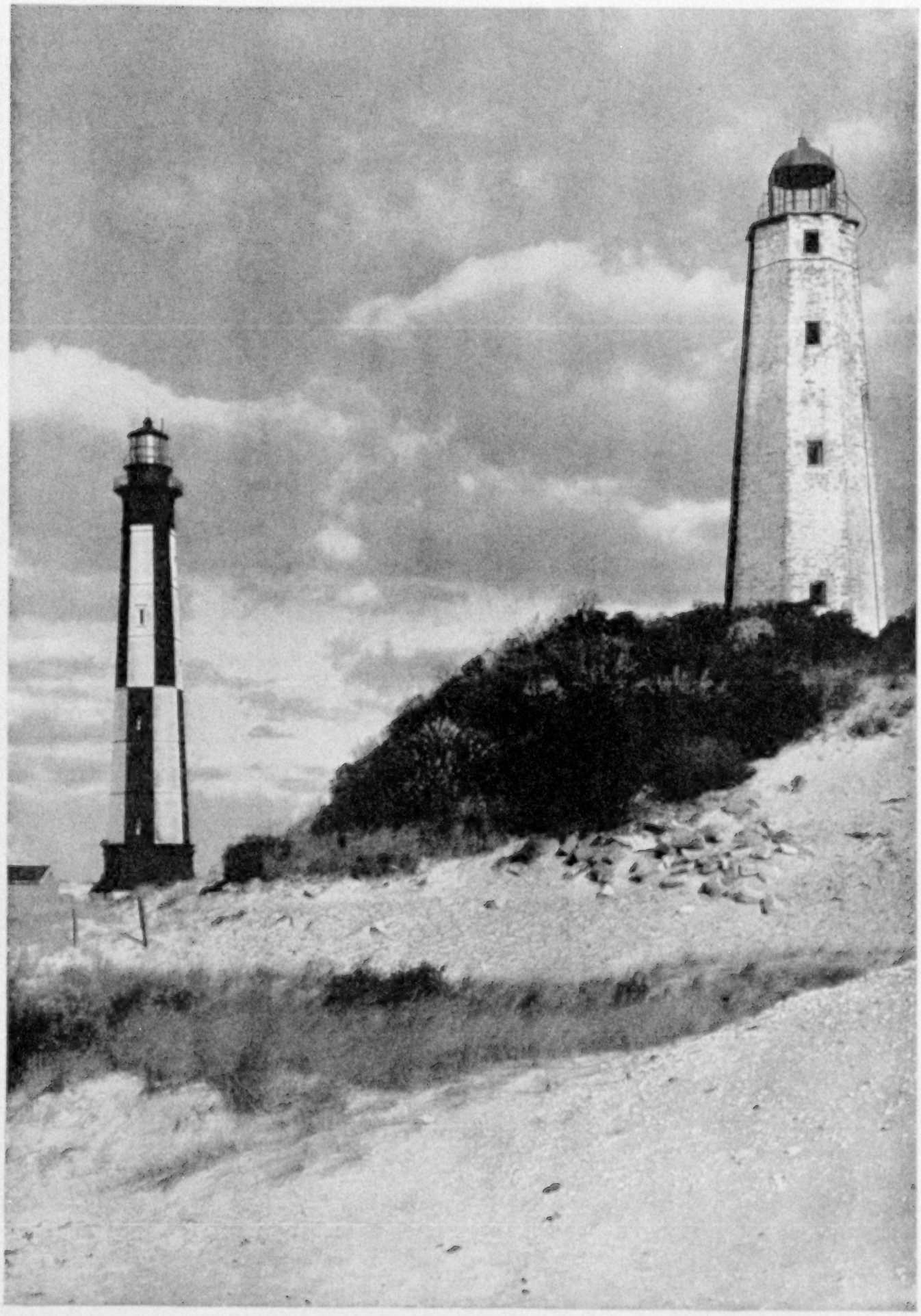


Photograph from R. H. Newcomb

THE LAST STAND OF A LAND DIVISION SOMEWHERE OFF THE COAST OF MASSACHUSETTS



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FATHER AND SON: CAPE HENRY, VIRGINIA

The old light tower was the first builded by the American Government. The land army has defeated the sea at this point and driven it back nearly half a mile since the old light was established in 1791.

and alas, the untiring foe drives a salient into the lines of the land and uses the booty captured in his next drive. The salient is a bay or cove, and the wings are the headlands that bound it.

If one thrust be not too bitter, or if the retreating shore-line finally reaches a secondary line of defense on firmer ground, the enemy is held; otherwise it drives around the headland on all sides; and thus do "pulpit" or "chimney rocks" become lone outposts.

WHEN THE SEA ENCOUNTERS CROSS-FIRE RESISTANCE

It often happens, however, that when the thrust of the sea becomes too deep, the flanks of the attacking forces are exposed to the cross-fire resistance of the headlands, and finally reach a degree of penetration where they cannot maintain communications, and their attack comes to a standstill. In such a case we have a deep bay where the rushing waves of the sea lose their force before they sweep the inner shore-line.

One does not have to study the warfare waged by the sea very long before discovering that it not only uses "pincer" tactics, but that it also makes use of mining operations. Sometimes it finds that its most powerful onrushes are dissipated by the resisting power of a great headland, as the dew is dissipated by the morning sun or the darkness by the light of day.

With boulder and shingle the waters drive furiously at the base of the cliff, tearing away its foundations inch by inch and foot by foot until a soft spot is uncovered, and the sea enemy finally undermines entirely the great structure of defense. Then with the hydraulic pressure of an imprisoned wave it heaves forward, and the rocks above have no alternative but to tumble helplessly into the maw of the liquid host, to become projectiles in the sea's further assaults.

Often, too, the rushing waves find a weak link in the armor where one ledge of rock overlies another, with gravel or clay between. Yard by yard they wear out this grouting material, and a sea cave is the result.

The ledges which constitute the roof and the floor, respectively, have a dip toward the sea, and as the waves rush in they come nearer and nearer to the surface, until finally they break through at some joint in the roof, and we have the spouting horn—a trumpeter of Neptune who gives the gage of further battle with each flooding tide.

At still other places the waves drive back the softer shore and bare a long stretch of adamant on each flank. And then it comes to a spot in this flinty headland that is weak, and cuts its way through, making a graceful arch of a wonderful, wave-hewn natural bridge.

The tremendous power of the sea in utilizing the boulders it has wrested from the land in its return to the attack surpasses belief. Huge rocks, weighing seventy-five tons or more, have been moved by the power of the waves.

THE 42-CENTIMETER SHELLS OF THE SEA

Driving the big boulders up against the cliffs as though from a giant catapult, these 42-centimeter shells are finally worn down into cobble-stones, then into pebbles, then into sand, and at last into silt, which, caught up by the undertow, is borne along and out to sea, a bit of land forever in the prison-camp of the ocean.

As a result of the terrific grinding of the glacial ice of ages agone and in the following centuries under such methods of attack as have been broadly sketched, the Maine coast beyond Portland has become a series of gulfs and bays and headlands, with islands and rocks without number as the observation posts and first-line defense against the sea.

From Portland to Newburyport the bold cliffs gradually lower their towering forms and beaches and broad bays appear (see page 523). From Newburyport to Woods Hole is about eighty-five miles in a bee-line, but if you follow the shore around Cape Cod Bay and down along Nantucket Sound it is some three hundred miles. In that stretch of coast-line one might see fairly good types of all the shores from Greenland to Florida. There may not be fiords like those of the far north or swamps like those of Virginia, Georgia, and Florida, but there are enough shore-line features to fascinate any pilgrim who would wander that way.

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Photograph by Carl J. Lomen

AN INNOCENT BYSTANDER CAUGHT BETWEEN THE BATTLE LINES

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Photograph by H. C. Mann

OBSERVERS ON THE BATTLE-FRONT OF NATURE'S WORLD-OLD WAR: OFF THE VIRGINIA CAPES

Photograph from M. Rosenfeld

A NEUTRAL OBSERVER SURVEYS FROM ALOFT THE ETERNAL CONFLICT OF THE LAND AND THE SEA FORCES

A GIBRALTAR OF THE AMERICAN SEACOAST

North of Gloucester lies Cape Ann, with her pocket beaches. Here the waves run high and dash themselves with unpitying force against the solid old rock; but she holds firm, a Gibraltar of the American seacoast, guarding the outer approaches to Boston, as the wonderful British fortress has stood watch and ward in the path of the invader of the Mediterranean. So wild is the sea here that it is said that a sharp-angled fragment of stone as large as a steamer trunk is often worn as round as a tennis ball in the course of five years.

Many a brick and coal laden ship has perished upon such shores as these, and their scattered pieces of cargo have been ground to bits under the incessant hammerings of one another under the urge of the waves.

Marblehead, on the northern shore of Massachusetts Bay, is worthy of its name, and often the sea resorts to unusual tactics in trying to conquer it. Shaler, the well-known authority on geology, tells of witnessing an attack in which the sea used seaweed as its ammunition train. Sometimes these plants grow in shallow waters and wrap their roots around boulders on the floor of the ocean. Then, as the surging sea rolls in, it lifts the seaweed on its buoyant bosom, and the plants in their turn tug at the rocks which their roots enmesh, until finally the boulders are lifted clear of the bottom and carried along into the maelstrom of attack.

It is too hard a struggle for the seaweed, which is quickly torn asunder, but the stones are driven up to the attack again and again. As much as ten tons of these seaweed-borne rocks are sometimes cast up upon a quarter-mile stretch of shore-line by a single storm.

COMMUNIQUES OF NATURE'S WARFARE

Farther south, on the northern wing of the Atlantic battle-front, lies Lynn, and in the sea below Lynn lies Nahant Island, which bids us hope, for here at last the sea has lost the initiative, the land has assumed the offensive, and in an inspiring counter-attack is demonstrating its ability to give blow for blow and to match maneuver against maneuver.

Indeed, here for the first time we are to learn, in Nature's War Communiqués, that the hardest rocks of the northern coast are more yielding than the softest sands of the southern waters and, in spite of local engagements fought with fluctuating results in this or that sector, as a whole, the land is holding its own from Lynn to the silver sands of Alton Beach at Miami.

In the counter-attack in the Lynn sector the land has built up a sandy beach between Nahant Island and the mainland.

Passing the Boston sector, where comparative quiet has reigned for some time, midway between Plymouth and Barnstable, where Buzzards Bay on the south and Barnstable Bay on the north have long seemed to conspire to tear off the "bare, bended arm" of Massachusetts, as Thoreau called Cape Cod, we come to the Cape Cod Canal. According to British charts in the Library of the United States Coast and Geodetic Survey, thought to date from 1715, there was once a sea-cut channel through that neck, and Cape Cod was an island, not a peninsula. Here, again, the land won out in after years and tied an island to the mainland.

ICE AS A LAND ALLY

The Cape Cod Peninsula affords an illustration of how the ice in geologic times came to the aid of the land in its war against the sea. Once glaciers swept down from Labrador and Maine and deposited vast quantities of clay and boulders on the floor of the sea, making a great breakwater to the east of what is now Cape Cod Bay. This obstruction forced the sea to give up the stores of sand it was carrying, and with this material the breakwater gradually wrought itself into a peninsula.

Passing around Cape Cod's two shorelines, inner and outer, one comes next to Chatham, at the elbow of the outer shore. Here the sea is once more on the offensive, driving forward into the shoreline at the rate of a foot a year.

South of Chatham is Monomy Point, called by De Monts, the French explorer who nearly came to grief there in 1605, the "graveyard of ships," a reputation it has lived up to for three centuries and better. Looking southward across the

Photograph by George R. King

WHERE PRISONERS OF WAR ARE FORCED TO FIGHT THEIR BRETHREN

A typical sector near Highland Light, Massachusetts, where the sea enemy uses captured boulders, torn from cliffside defenses, as projectiles with which to batter down the ramparts. Note the prisoners "left upon the wire" at the beachline.

eastern entrance to Nantucket Sound, one sights Nantucket Island in the distance. On the south side of this island the retreat of the cliffs is often as much as six feet a year.

Further to the west lies Marthas Vineyard, also an outpost of the land. Here there are rearing ramparts of rock a hundred feet high, but even they cannot entirely withstand the incessant attacks of the indomitable sea.

To the southwest of Marthas Vineyard lies the desolate island of "No Man's Land," which is well worthy the name it bears. Gradually the sea is tearing away its vitals, and it is predicted that by the end of the present century it will disappear beneath the waves forever.

In the case of the Cape Cod Peninsula, we saw how the land had used the ice of geologic times as its ally against the sea, but when we come to Long Island

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AN OBSERVATION POST ON THE FIRING LINE

The sea makes a desperate attempt to gain a foothold near Portland Head Light, Cape Elizabeth, Maine, but with little success

there is a different story. Here the ice negotiated a separate peace with the sea, and, sweeping eastward across New York, scooped out what is now Long Island Sound, thus enabling the enemy to isolate the island entirely from the mainland.

WHEN THE LAND ASSUMES THE OFFENSIVE

On the south coast of Long Island we find beaches and shifting sands. Here again we get into more hopeful territory, for the land always has an upbuilding Oliver for every down-tearing Roland the sea may have to offer. From Shinnecock Bay to Fire Island, a rampart of sand some 40 miles long has been thrown forward off the real shore-line, and the sea, pounding against this in its maddest fury, encounters a buffer that throws it back a helpless and exhausted foe. Moreover, the sea is compelled to surrender captive sands taken up elsewhere, and these are re-equipped and put into the front trenches of the island's south-shore defenses.

Farther west on Long Island lies Rockaway Beach, the advanced line of defenses which the land has been throwing out to thwart the attack of the sea at the apex of the Jamaica Bay salient. What was once Pelican Beach has all but disappeared and what is left of it is now known as Barren Island. But Rockaway Beach has gained ground westward as fast as Pelican Beach has been driven eastward, and has now all but landlocked Jamaica Bay and its islands. It advances at the rate of two feet every three days.

SANDY HOOK AN ADVANCE GUARD

On the Jersey Coast, Sandy Hook stands out as an advance guard of the forces of the land, determined to cut through the line of communications of the sea in its drive into the Raritan Bay salient (see map, page 535).

Photograph by H. C. Mann

A "TANK" ADVANCING OVER A FOREST

Sometimes, when the wind acts as an ally of the land forces, a heavy tribute is exacted from the sea, from which huge sand ramparts are builded. Often these dunes, like great "tanks," become insubordinate and march inland, engulfing forests and even villages en route.

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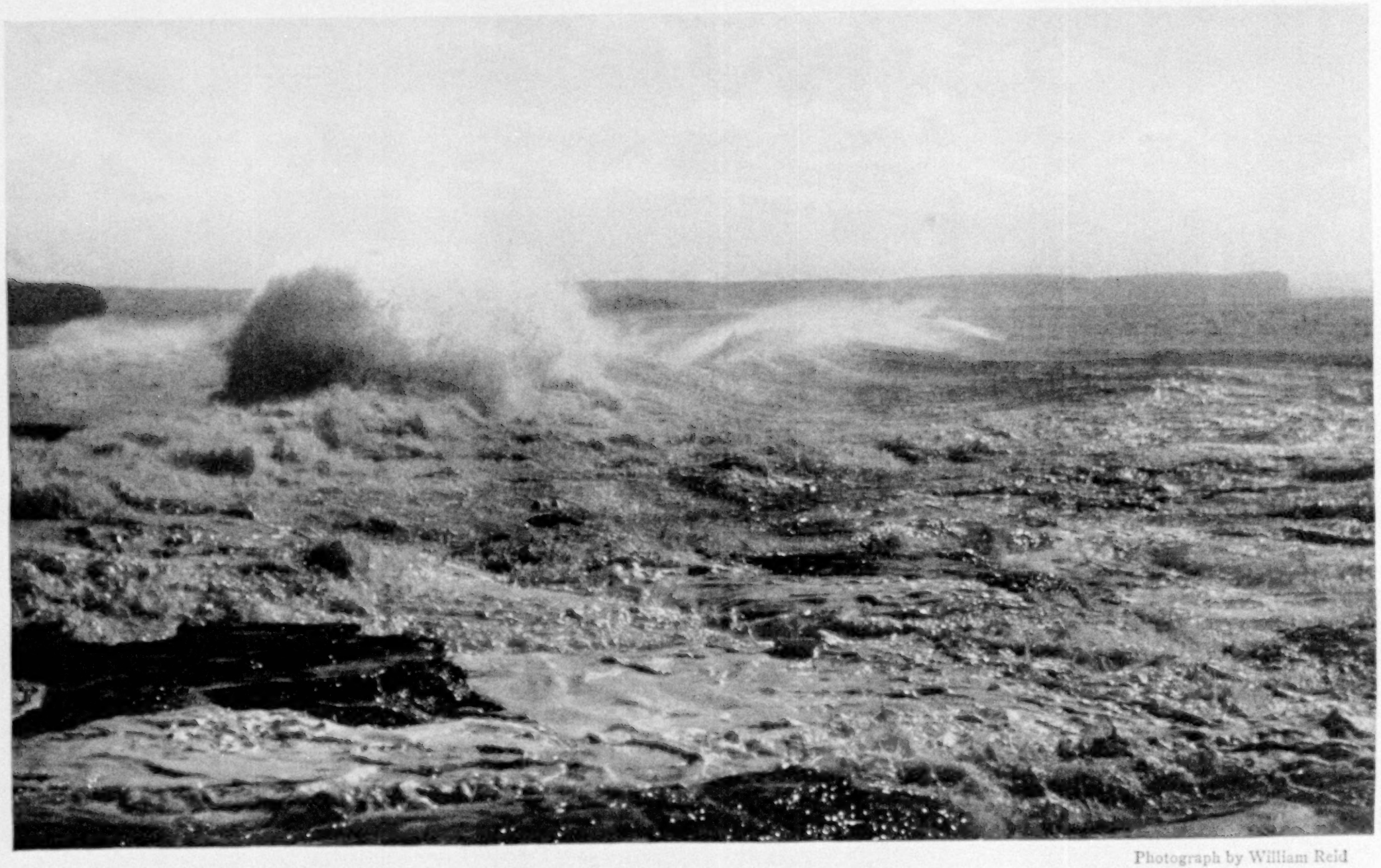
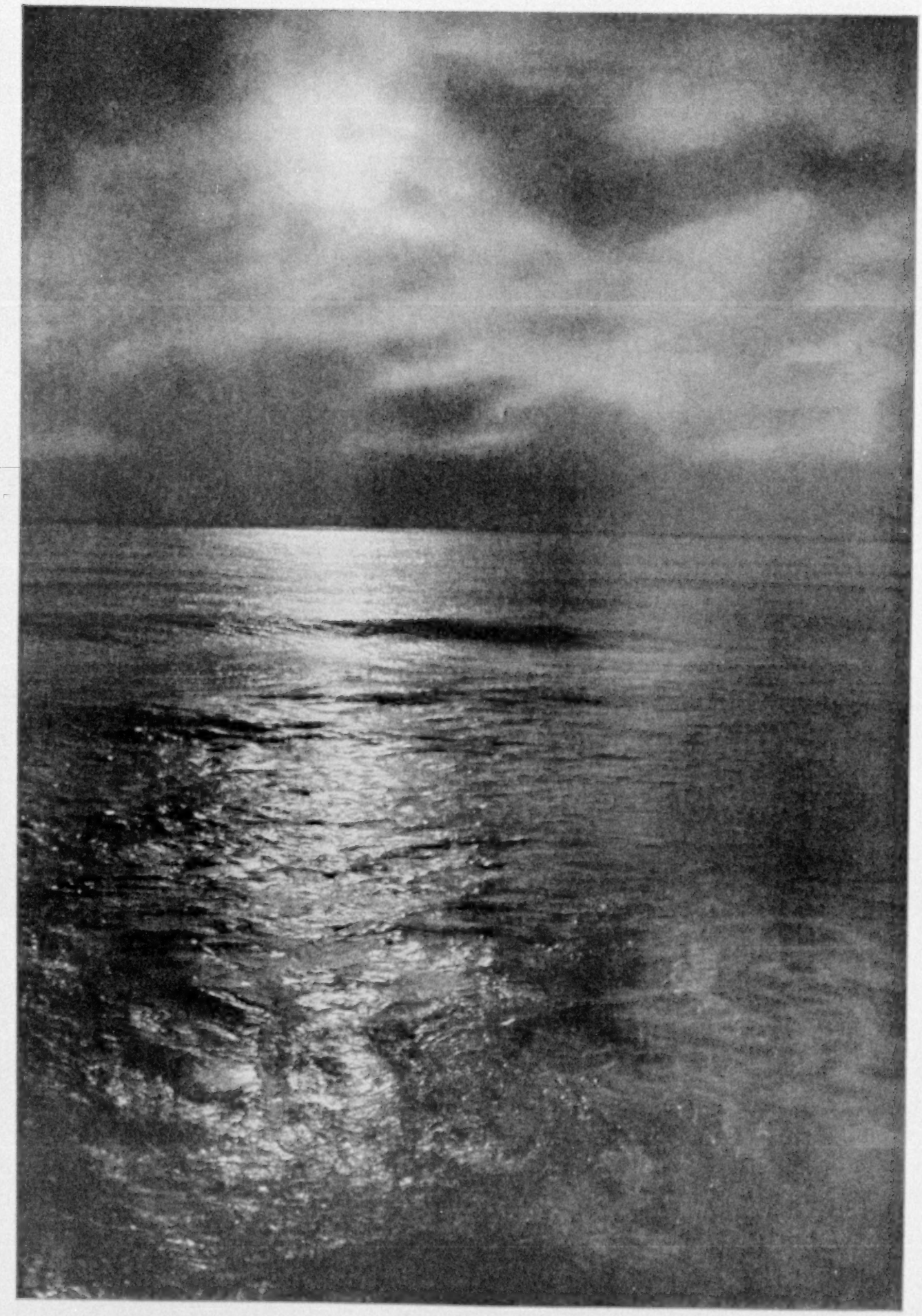


Photograph by William Reid

"STAND TO ARMS"

There is little rest given the grim defenders of such a salient, for here the enemy force their prisoners, torn from cliff and beach, to advance with them in the wild assault



Photograph by H. C. Mann

MOONLIGHT ON THE BATTLE-FIELD

Between the tides of attack a brief truce takes place between these world-old antagonists, but, as is the case in any undecided war with an unscrupulous enemy, it only means time in which to prepare for further attack at a later hour.

When there is a deeply indented coast-line, the ocean currents paralleling the shores refuse to follow the indentation and cut straight across. Striking deeper water, they slow up and deliver from bondage the captive grains of sand which momentum has enabled them to carry along.

Eventually these grains grow into a high submarine ridge, which holds up the onrushing waves and forces them to give up a sand toll as they pass. Having gained courage in its size, the ridge makes a sally from the surf and becomes a full-fledged spit, or hook.

Sandy Hook is a splendid example of this method of the land in invading the dominions of the sea. It very frequently happens that the spit marches on until it reaches across the bay area and captures the entire water army within the salient. Then science decorates it with a *croix de guerre* and gives it a new name—it becomes a bar.

The captured waters of Tisburg, Oyster, and Herring ponds, on the southern shore of Marthas Vineyard, afford an excellent example of the conquest of the sea by a spit. But the fortunes of war often change, and the Marthas Vineyard Bar, once forcing a retreat of the open sea, is now in turn being driven steadily back. It is believed that the coastal edge at this point is a thousand feet from where it was when first seen by a white man.

WHEN THE SANDS ARE LED CAPTIVE

The Jersey coast is full of classic examples of the war between the land and the sea. Here are no towering ramparts, with frowning walls, that seem to defy all the armies with which General Neptune can attack them. Nay, rather, here the land forces have camouflaged their strength, and have entrenched themselves behind barriers of sand.

At Long Branch one may watch the shifting fortunes of the battle. Here, in spite of the most elaborate system of breakwaters man has erected, the shore-line is being led captive inch by inch. But the prisoner sand does not remain in captivity. As it is being escorted back of the lines it makes a successful dash for liberty and rejoins other land units north and south of Long Branch and aids in a counter-attack in those neighborhoods.

It is hard to visualize the full meaning of the conflict's swing until one views the battle-field from the observation tower of history. A few feet won or a few feet lost in a year seem insignificant. But generations are merely short-lived seconds ticked off on the clock of geologic time, and one needs the sweeping view of centuries to appreciate it all. On the New Jersey coast we get a little of that.

Prior to the War of 1812, Old Cranberry Inlet was one of the best havens of refuge on the eastern coast. It was a safe harbor for American privateers lying in wait for enemy commerce. But one night the sea made a heavy concentration of forces and staged a night attack of particular fury, broke down the defenses, and shifted the whole channel a mile to the northward.

SHIFTING OF LAND RESERVES AT ATLANTIC CITY

In the vicinity of Atlantic City the sea is ever striving to gain a foothold; but at present the best it can do is to force a shifting of land reserves from one side of a salient to another. In a few years it took off some 76 acres of ground from the neighborhood of Maine Avenue and forced most of it around to the lee of the point at Ohio and New Jersey avenues.

The pounding power of the waves when the sea is staging one of its major attacks is hard to picture by those who have visited the front-line trenches in bathing suits and have seen only a quiet sector. But when the breakers rush forward at a height of 10 feet or more, in serried ranks, striking from four to six majestic blows a minute, one does not wonder more at the vastness of the sea's reserves than he does at the land's powers of resistance.

SUBMARINES EMPLOYED BY THE SEA

The sea is thoroughly modern in its methods of warfare, even employing the submarine. As the waves sweep inward and break upon the shore, their waters must have some egress back to the deep. If they tried to go back as they came they would create confusion in the onsweeping forces behind them. To obviate this,

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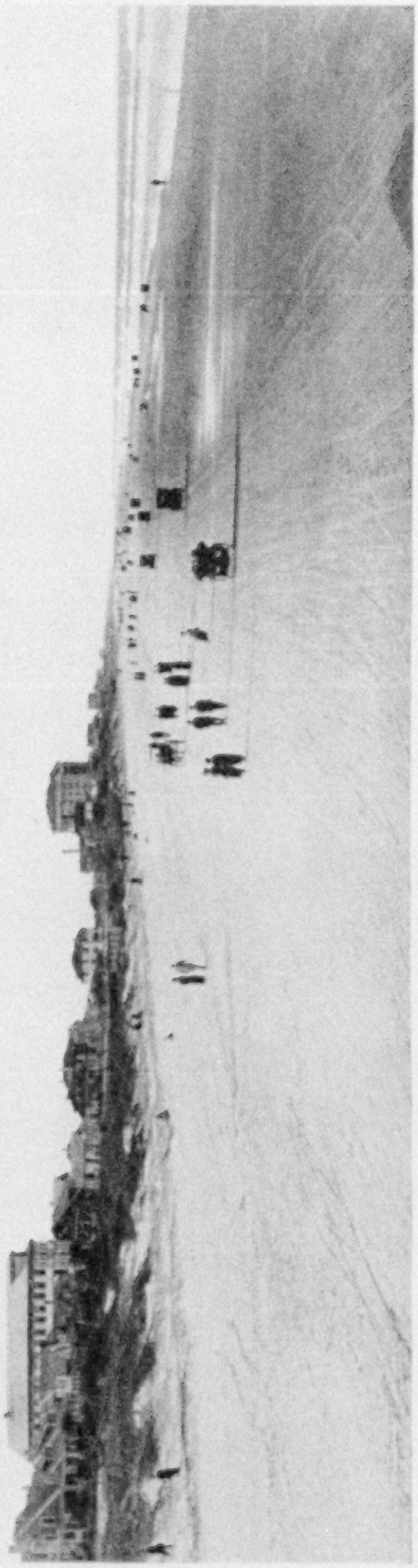


Photograph from J. E. D. Graves

A ROYAL BATTLE-GROUND: ORMOND-DAYTONA, FLORIDA

Here the White Horse Cavalry of Neptune make a charge twice daily over the most perfect beach in the world, from three to five hundred feet wide, on a front of about thirty miles. "The Silver Sands of Ormond" is no empty figure, because for ages the shells of the coquina clam have been ground under the heels of Neptune's charging horsemen until they have become fine sand. As soon as the foam-flecked forces fall back, the silvery sand settles down into a surface as level as a floor and almost as hard as asphalt, making one of the finest automobile speedways in the world, which is always kept in order by the tides.

they submerge and return along the bed of the beach. Here they constitute the undertow, an undersea current equally as reckless of life and the rights of noncombatants as a Hun U-boat itself.

It is by this route that they lead off many of their prisoners and drown them beneath the waves of the sea. Ten thousand banks on the bottom of the deep are cemeteries peopled with the worn and wasted sands of the seashore which were carried there by the undertow.

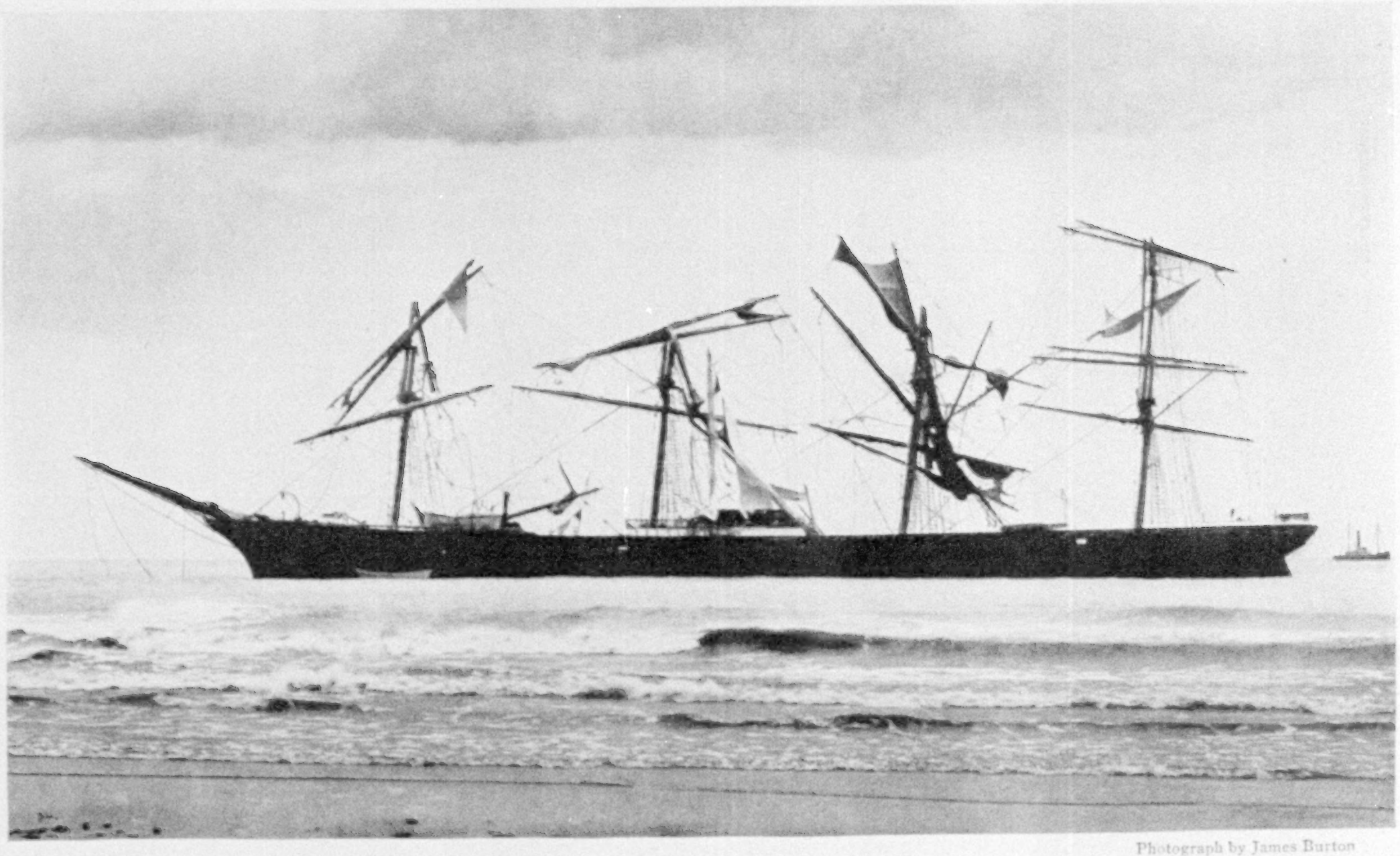
If the sea in its warfare against the land sometimes ruins a haven of refuge, as it did when it broke through the lines of the land at Old Cranberry Inlet, previously cited, at other times it is compelled by the land to create such a haven.

Off the Maryland-Virginia shore lies the long, barrier-like island of Assateague. Once the seaward southern point of this island was only a bare lip. Gradually, however, the land began to force the sea to give it sand, and with this it has built a fine hook behind which many a mariner seeks safety from the fierce nor'easters that sweep these coasts.

From 1908 to 1911 this invasion of the sea by the land went forward at the rate of 200 feet a year. But latterly it is following the usual course of offensives and is now advancing at the rate of only 100 feet a year.

ANOTHER ALLY OF THE SEA IN THE VIRGINIA CAPES REGION

When one comes to the Virginia capes and studies conditions there, it is found that in times past the sea had another ally, of which no mention has yet been made—subsidences. In a bygone age the Susque-



Photograph by James Burton

ON THE WIRE: NO MAN'S LAND. WHAT SOMETIMES HAPPENS WHEN MAN DEFIES THE WARRING ELEMENTS

The sun is munition maker for the sea. Every day it sends to the earth enough heat to melt a cake of ice 5,000 feet thick and as large as the State of Massachusetts, as much heat in an hour as the fires of all Christendom have produced in a thousand years. This heat is the high explosive that puts the fury into the storm that drives the projectile waves to the attack.

Photograph by William Reid

BARRAGE FIRE

Again and again the regiments of the deep advance to the attack with the wind ally behind them to whip the wave crests into stinging shrapnel

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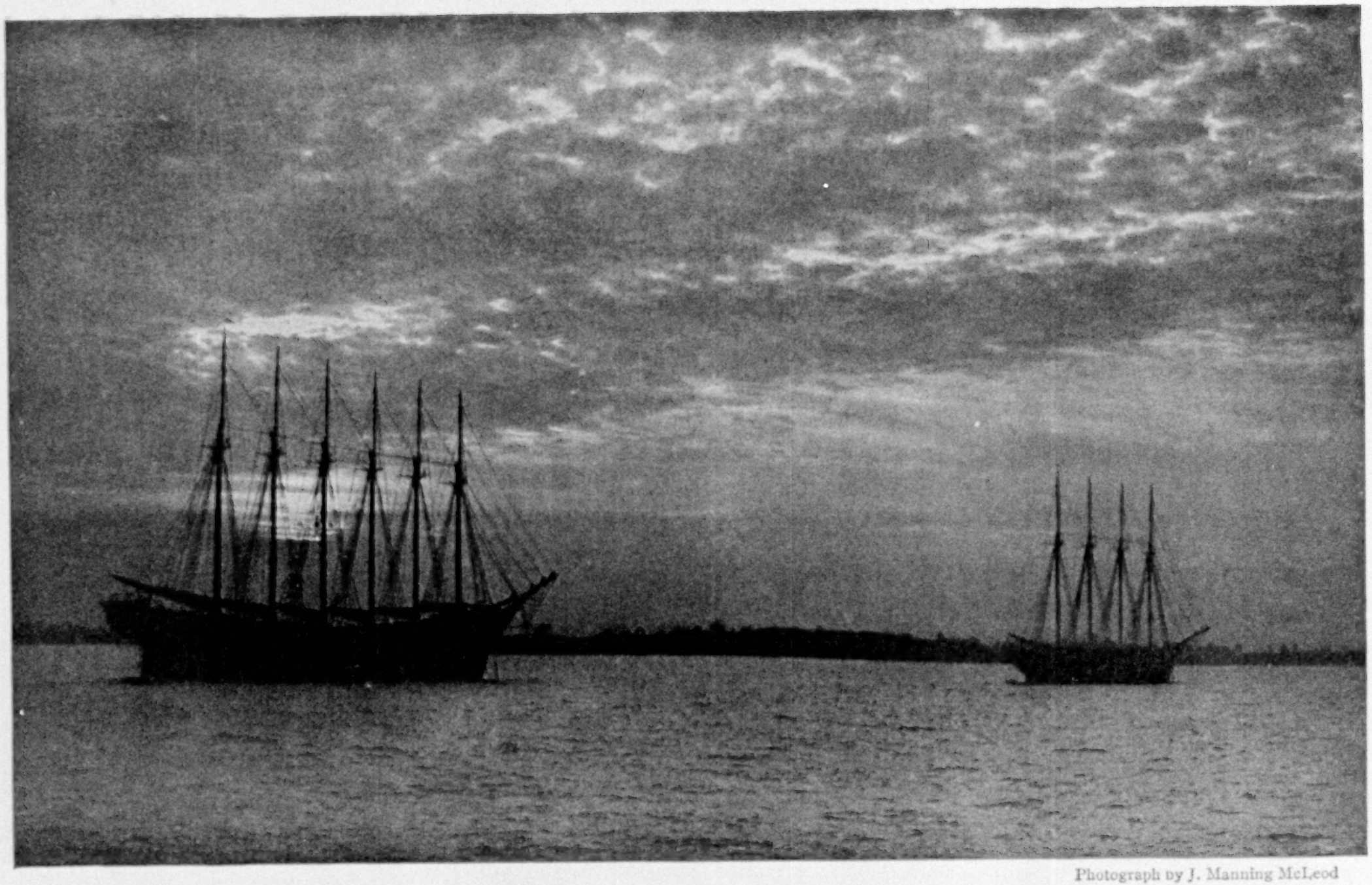
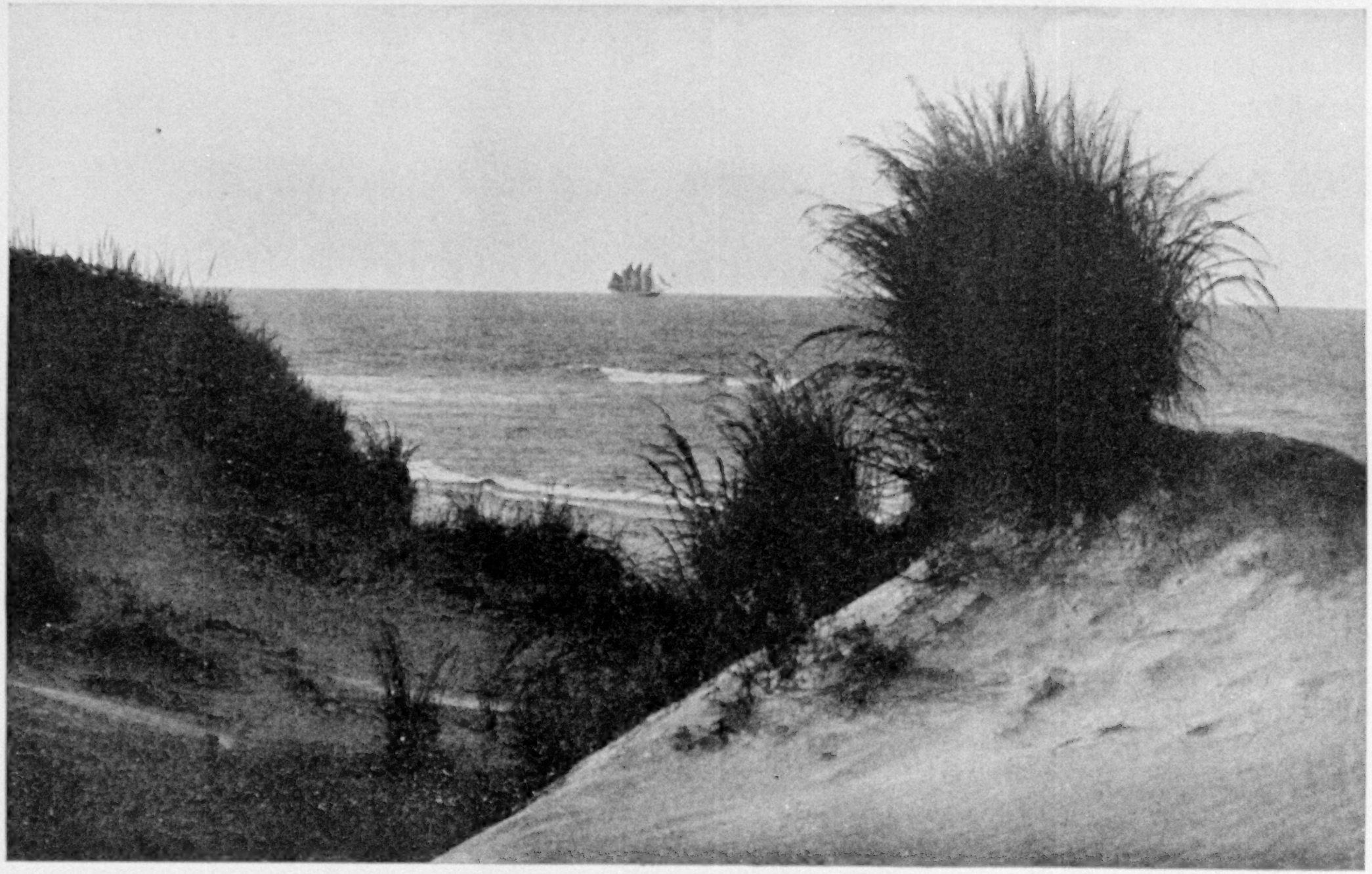


Photograph by J. Manning McLeod

SUNRISE NEAR NORFOLK

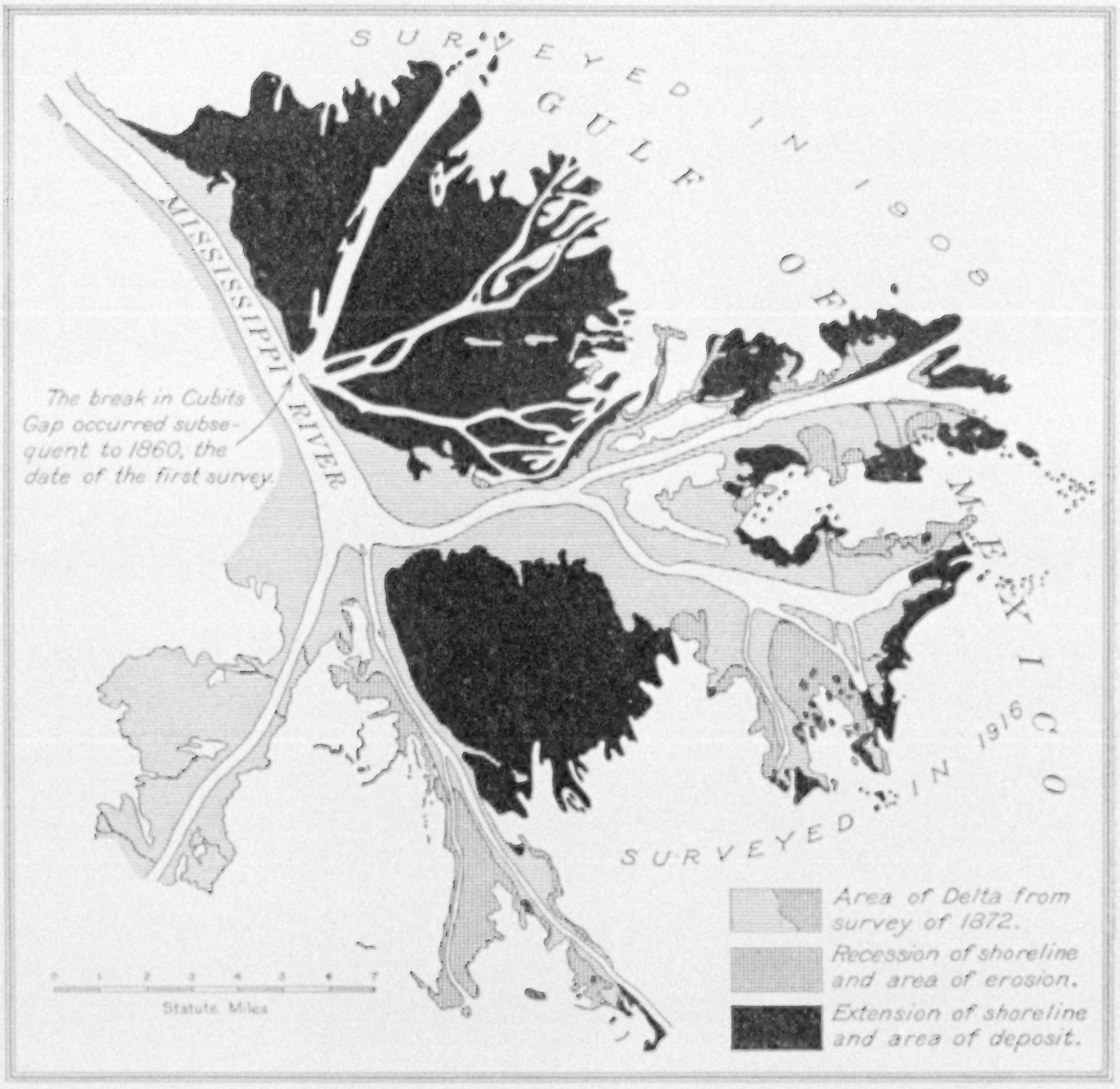
The quiet waters of Norfolk's harbor have for nearly a century proved a welcome haven to ships from every out-of-the-way corner of the world; here the antagonists of the universe seem to have established a sort of unspoken peace



Photograph by H. C. Mann

A CAMOUFLAGED TRENCH

The enemy's thrusting-point is frequently changed and heavy artillery is superseded by strategy, during which period the land regiments endeavor to strengthen their fortifications by utilizing plant life to cement their trenches



SKETCH MAP OF THE MISSISSIPPI DELTA SHOWING FORMATIONS

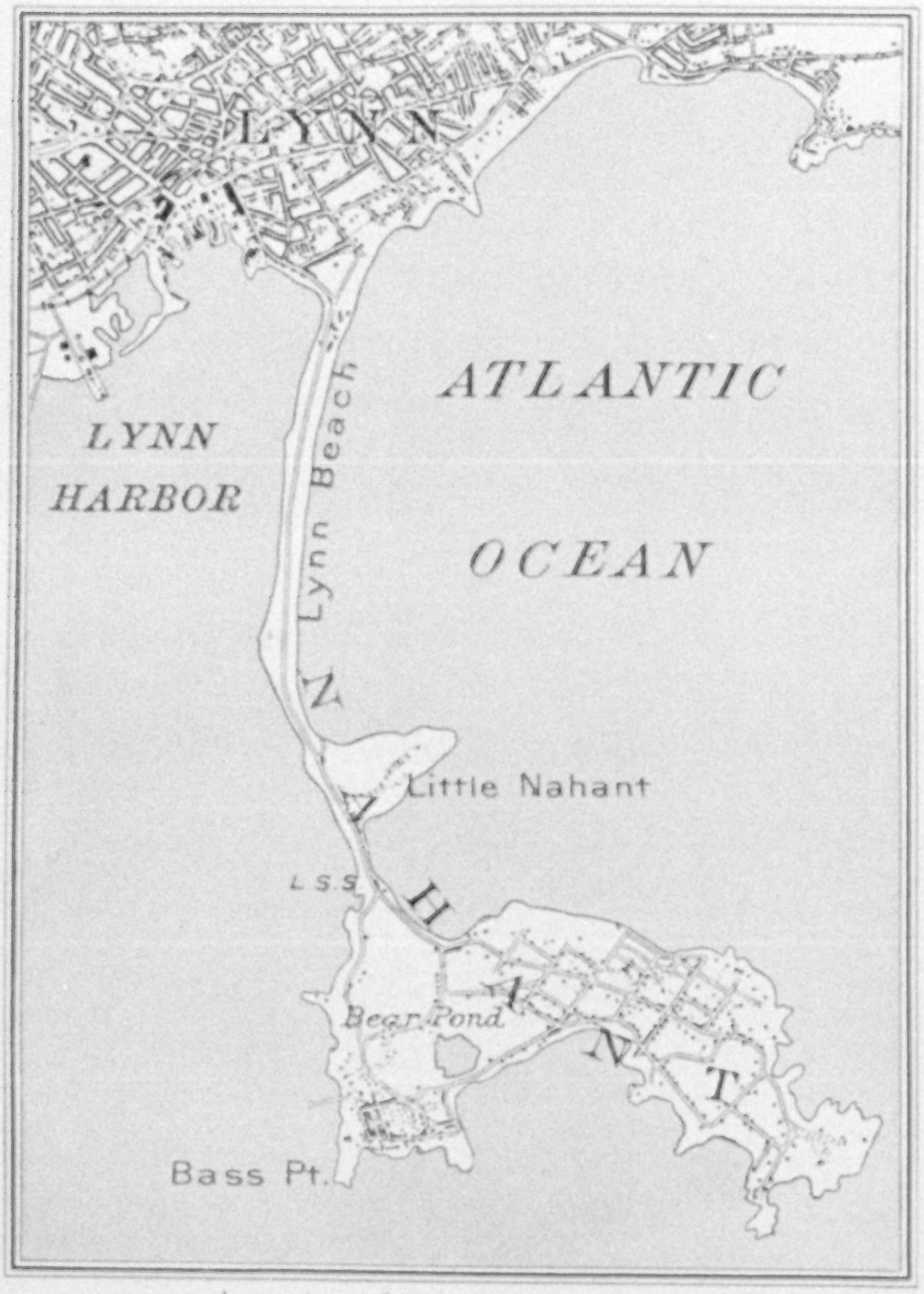
hanna, the Potomac, and the James rivers rolled in stately grandeur to the sea. Then there came a subsidence, and the sea rushed in through the reach between Capes Charles and Henry and overwhelmed the land in all that vast area we call Chesapeake Bay.

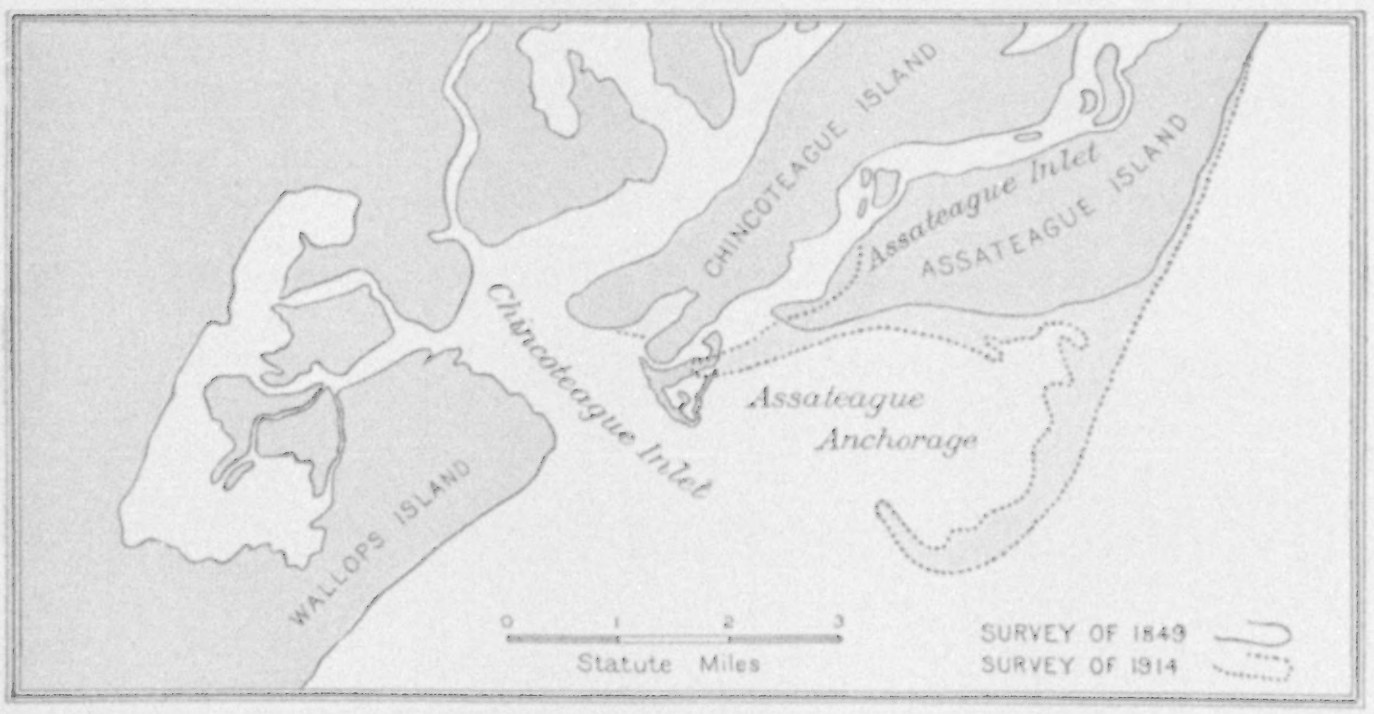
The land has not always been without an ally to counterbalance this display of strength. Sometimes there come upheavals of the floor of the sea that drive the water into a retreat which often becomes a rout.

The consequences of even a slight upheaval may be strikingly shown by following what is known as the twenty-fathom line off the eastern seaboard. This line divides the sea into two parts, that which is less than 120 feet in depth, and that which is deeper. Were the floor of the continental shelf, the vast, undersea platform upon which the continent rests, to rise 120 feet, Delaware Bay, Chesapeake Bay, Albemarle Sound, and all the other deep indentations of our coast would disappear and the new battle line would be practically without salients.

WHEN THE LAND SCORES A VICTORY

When the land is victor, through an upheaval, it always straightens out its battle front. The bed of the sea, being untouched by the chemical changes of the atmosphere, unharassed by running water, but constantly graded by deposits of sand in its low places and scoured by the tides in its high ones, is ever tending to assume a common level.





WHERE THE LAND HAS SCORED SIGNAL VICTORIES OVER THE SEA; THE UPPER CHART SHOWS LYNN HARBOR (SEE PAGE 521); LOWER CHART IS A SKETCH OF ASSATEAGUE ISLAND, VIRGINIA, SHOWING LAND DEFENSES BUILDED SINCE 1849 (SEE PAGE 528).

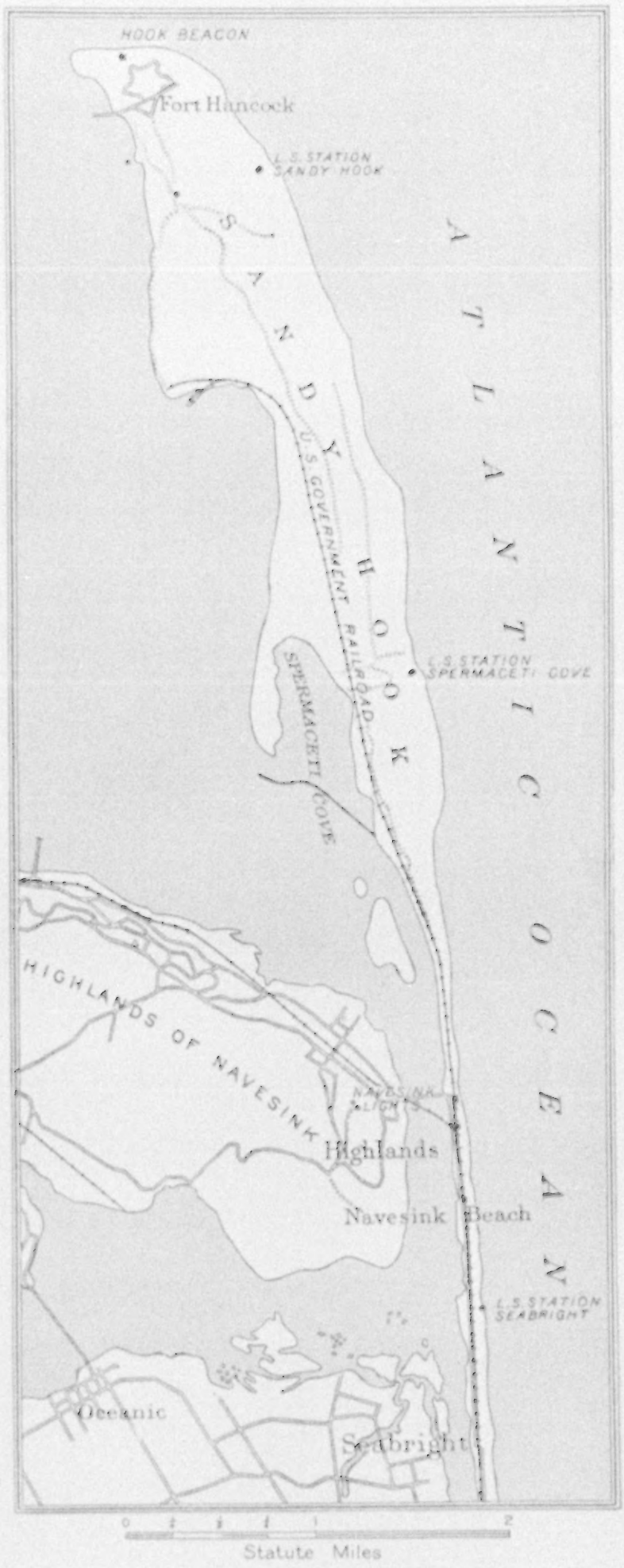
On the other hand, the land, attacked by chemical change, eroded by wind and running water, is an unending succession of elevations and depressions, and whenever there is a subsidence the sea seeks out every foot of ground below its level and occupies it.

Only the highest waves ever lash the sea bottom beyond a depth of 26 feet, and at 600 feet even the ripple-marks of a gentle surge disappear.

THE WINDS A BOLSHEVIK ARMY

From the Virginia capes southward, one may see the same forces at death grips that are found on the Jersey and other coasts. But neither at Cape Cod nor in Jersey will one behold to such advantage the rôle played by the wind, the Bolshevik of the land and sea war, as in the region of the kingly capes and in the vicinity of Hatteras. Now it boldly marshals its forces alongside those of the water and urges on the attack with the utmost abandon. And now, repentant of that rôle, it steps in and helps the land erect great barriers of sand, against which the wildest sea, in its maddest moments charges in vain.

The winds are the makers of dunes, the tanks in nature's war-



SKETCH MAP OF SANDY HOOK

A little south of Sandy Hook, at Long Branch, the highlands yield a continuous supply of sand to the action of the waves. This is washed up and down the beach with each advancing and retiring wave, but with each movement it is brought down to a place northerly of where it started, as the waves strike the shore obliquely and from a southerly direction. So the sand is carried along until it is deposited in deeper water, where the wave action is not so vigorous, gradually building up the bottom in much the same manner as a delta is built up at the mouth of a river. Sandy Hook is the result of this action aided by the winds which blow the wave-brought sands into dunes.

© H. C. Mann

THE SEA ATTEMPTING TO ESTABLISH A COMMUNICATION TRENCH ON THE FRONT LINE OF BATTLE IN THE VICINITY OF CAPE HENRY, VIRGINIA

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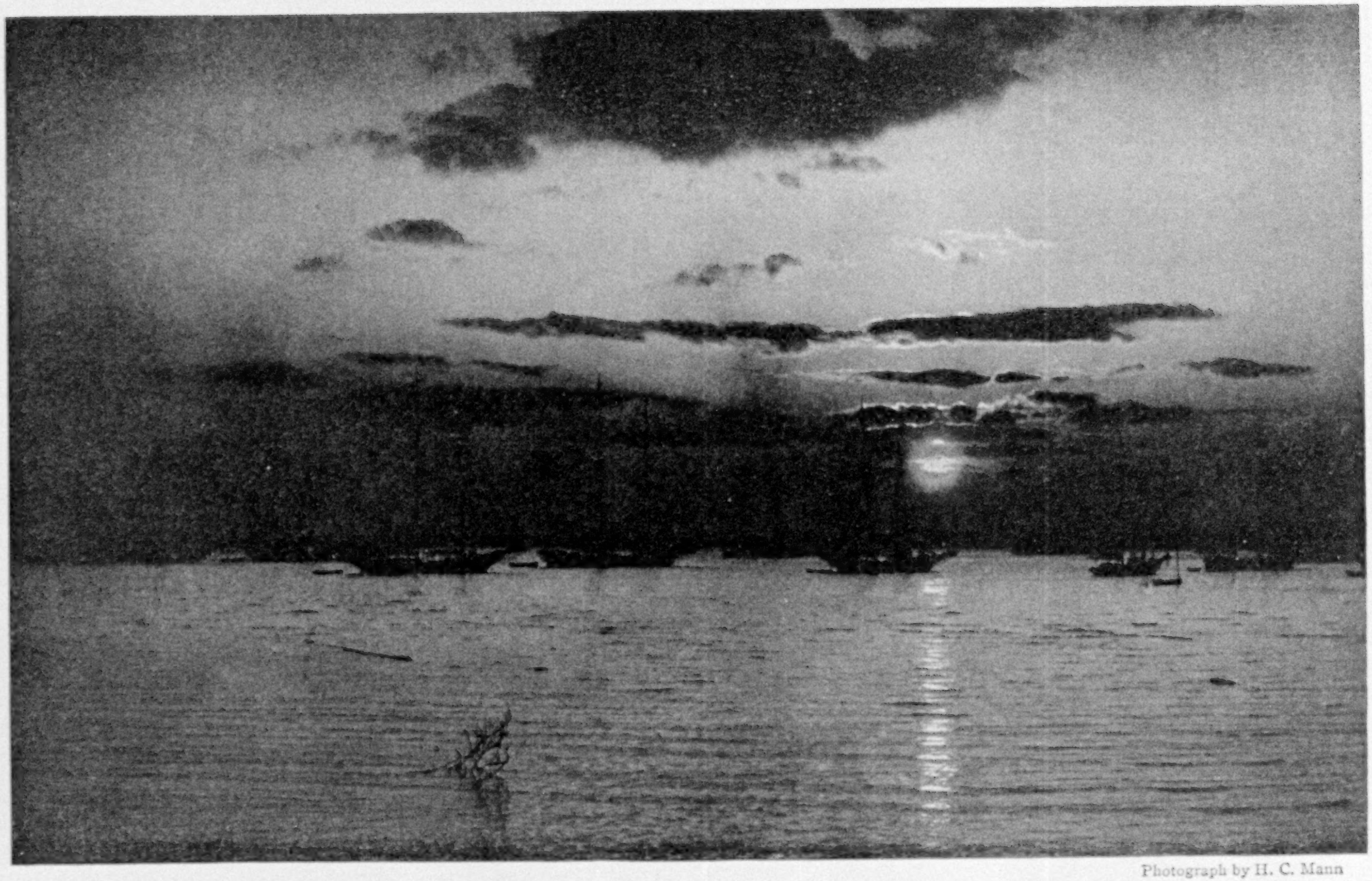

Photograph by H. C. Mann

WHERE THE LAND ARMY HAS FORCED PEACE: A PROTECTED HARBOR IN SOUTHERN WATERS

fare, and the humble beginnings of these mountains of glistening sand form a remarkable story. One who has stood on a sandy beach during a lashing hurricane and has felt the shining grains hurled into his face with a sting like that of a nettle, knows the wind's power and can the more easily believe the statement of scientists that a cubic mile of churned air may contain thousands of tons of sand.

Anything of substance, from a piece of wreckage to a tuft of grass, may be the nucleus of a dune that will grow and grow, broadening out as it rises higher, burying a forest, engulfing a house, or wiping out an orchard.

The trees which the sands seek to overwhelm put up a stubborn fight for life, but usually the dune is victor, and many are the places where one may walk through a graveyard in which a forest lies buried and only a limbless upper trunk has been left as a ghost of a brighter day.

Sometimes dunes migrate and the forest that was buried yesterday awakes to life tomorrow, for the wind picks up the sand it formerly laid down and drives it still further. Cemeteries have been first sheltered by a dune, then buried by it, then resurrected from it. On the Carolina coast a human graveyard has been despoiled by the shifting sands, and as the dune moved onward in its migration the very graves were opened by the force of the wind, and the bones of those who peopled them were left scattered on the soil.

WARFARE ALONG THE FLORIDA KEYS

The Carolina coast affords a striking example of the effectiveness of the wind as an ally of the land. Borne southward by the sweeping shore-following currents that come down from the north, sands that are the remains of boulders pounded loose from some rocky coast, have driven a wedge through the left flank of the ocean and have completely isolated the attacking armies holding the salients of the Albemarle and Pamlico sounds.

The winds have aided in the campaign and have piled up veritable mountains of sand against future attacks by the sea. Thus the main battle line is straightened out and the enemy finds itself in a cross-fire, with opposing forces athwart its line of communications.

Along the southeasternmost coast of Florida, from Cape Florida, which guards lovely Miami, on down to Key West, is the beautiful key region, where the coral polyps have established foundations upon which the land has been able to build first-line defenses that break up the assaults of the sea before they reach vital ground.

Sometimes the water erects wonderful natural bridges in these barriers. On the western shore of the northern part of Biscayne Bay, which laves the shore of Alton Beach on one side and Miami on the other, a little river escapes from the Everglades to the elevated Barrier Reef through a beautiful rock arch cut by the water.

MAN AS A PROFITEER IN NATURE'S WAR

Thus having, with some little romantic license, outlined for the nontechnical reader the front-line trenches of nature's great war on our eastern coast, let us turn aside and see how man, the innocent bystander, the neutral, fares through it all.

In the attack of the sea via the air he is preëminently a profiteer. Without the water and atmosphere to weather the rocks of the mountains he would have no soil upon which to live, and without the rain that gladdens valley and plain the soil would be worthless.

But when it comes to the frontal attack he has to resort to many measures to maintain his neutrality and to prevent both belligerents from encroaching upon his domain. With his Lighthouse Service he warns the mariner of dangers ahead and directs the fleets of main and inland waters into safe channels. With his Coast and Geodetic Survey he plots the pitfalls and the safe shipways, so that the sailor may set his course without fear. With his Coast Guard he stands unending watch to help those who, in spite of all care, become entangled in the barb-wire of nature's battle-fields and would perish but for its timely aid.

BEACONS THAT GUARD THE NEUTRAL'S RIGHTS

The most easterly light on the shores of the United States is that of West

Quaddy Head. From there to the southern tip of the Florida coast there are scores of beacons of the sea, some with histories that warm the hearts of those thrilled by deeds of heroism.

The one at Mt. Desert is on a bold promontory where the pounding waves break high, and have been known to lash so fiercely that they moved a rock, estimated to weigh 75 tons, a distance of 60 feet during the fury of a single storm.

The Matinicus Light has a thrilling story to tell. Once the sea made a complete breach in the rock. Only the women-folk of the keeper's family were there when the storm broke, but little Abbie Burgess, fourteen, and her sisters stood up bravely against Neptune's outburst, and for four weeks kept the light aglow, although during that entire time there was not a moment when the government keeper, their father, could effect a landing from the near-by mainland.

The Minot Ledge light, standing far out on a lone rock, where the sea rounds Cohasset and speeds into Massachusetts Bay, has a striking history. For three years men worked like Trojans to build a lighthouse upon a barren rock. Its beacon flared forth for the first time January 1, 1850. A little more than a year later, in April, 1851, a great gale swept those seas. On the night of the 16th the light was last seen from Cohasset at 10 o'clock, and the bell was last heard an hour after midnight. When morning dawned it was gone.

But that tragedy only temporarily dimmed the light of Minot Ledge. A few years later the government completed the present massive stone structure, ranking among the greatest of the sea-rock lighthouses of the world because of the engineering difficulties surrounding its erection. A considerable part of the foundation was below low water, and landings could be made only at low spring tides in a smooth sea. Work was prosecuted for three years before one stone could be laid upon another. No man who could not swim was employed, and no landing from a boat was attempted except when convoyed by another boat. A surf boat manned with three lifeguards was kept constantly on duty while the workmen were on the ledge.

THE NANTUCKET LIGHTSHIP

It would be interesting to recount the stories of Cape Cod light, and of the lightships that mark the passage through the shoals off Cape Cod and through the sounds to Buzzards Bay. But whoever thinks of lightships, thinks first of Nantucket. Mr. George R. Putnam, chief of the Lighthouse Service, in his excellent book, "Lighthouses and Lightships of the United States," tells this story of the Nantucket lightship:

"On a voyage from Europe the weather had been such that the steamer had crossed the Atlantic without the officers having secured a single observation after leaving the Irish coast. A passenger came on deck on a misty evening and heard first faintly, and then louder, the blasts of a steam whistle at regular intervals of half a minute. Then through the thin fog a white light eclipsed every quarter of a minute, and there soon loomed out of the mist in the dusk a little vessel at anchor, rolling heavily in the swell, with a red hull, and *Nantucket* in large white letters on her side.

"The great liner swept by and on toward her port, for then it was that her master had definite knowledge that he was 200 miles east of New York harbor. This lightship, anchored on one of the most exposed stations in the world, has given this message to many thousands of captains and has been the first signpost of America to millions of passengers."

WITHSTANDING THE SIEGE GUNS OF THE SEA

The Nantucket lightship is anchored in 30 fathoms of water, 41 miles from the nearest land, Nantucket Island. She is 135 feet long, with full propelling power should she part her cables. She has a crew of 15, a submarine bell, and a wireless outfit.

When the sea brings up its siege guns and heavy artillery is the time of all others for the lightship to be on its station. It must wallow in the trough of the sea as best it can and ride out the storm at a standstill, lest some hapless master get caught in the drumfire of a terrific offensive.

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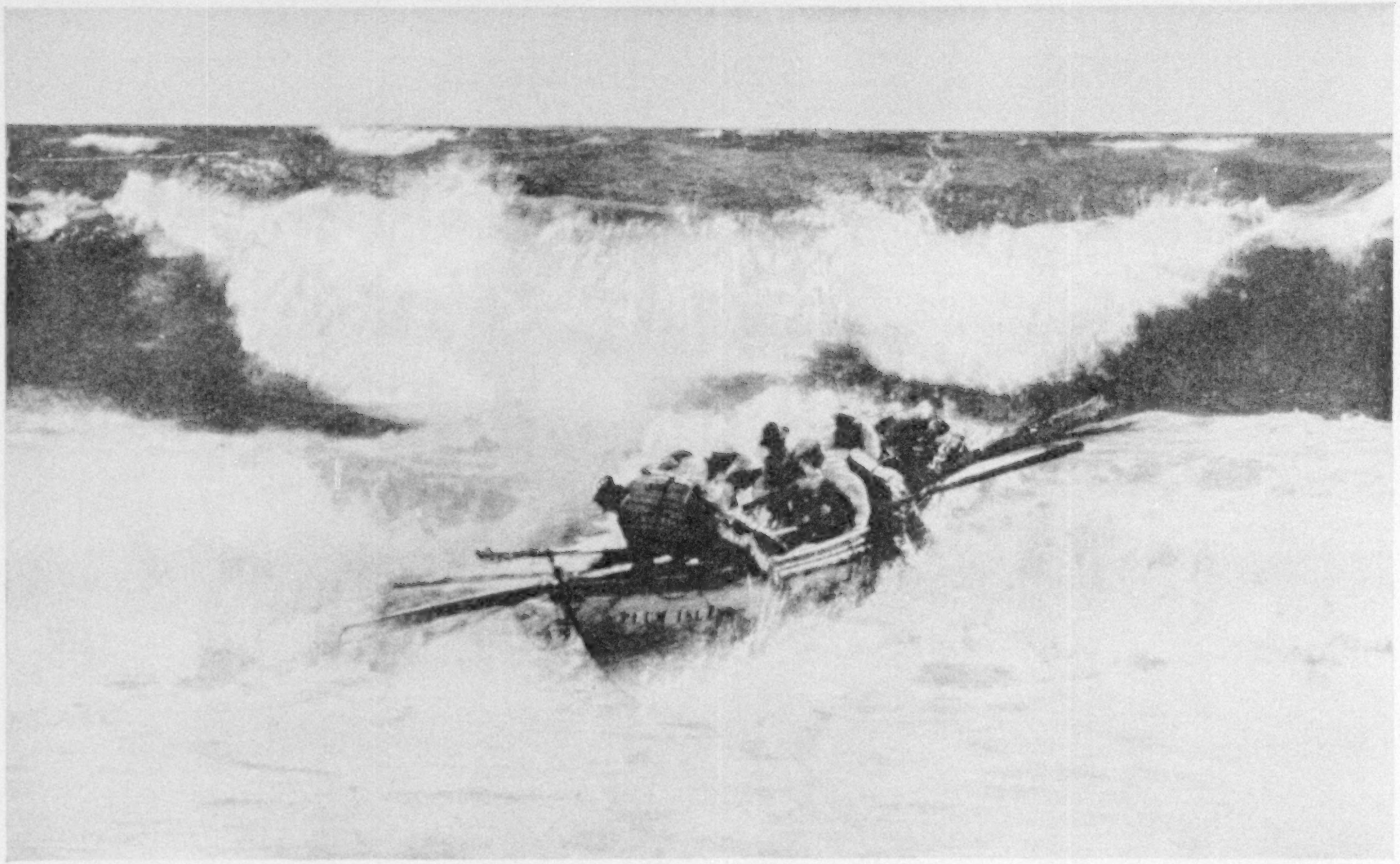

© Charles A. Harbaugh

OVER THE TOP

Trained from childhood in sea-lore and surf-boating, there are no better boatmen in the world than a coast-guard crew. Launching or landing through a heavy surf requires superb skill, keen judgment, and much courage. The lack of any of these requisites spells almost certain disaster—a capsize if nothing worse.

Heading inward to New York, one might tell of the Fire Island Lightship and Ambrose Channel Lightship, the latter marking the beginning of the "run" to Europe and the end of the "run" to America.

Navesink light, built on the highland of the Jersey coast just below Sandy Hook, with its seven-ton bivalve revolving lens of the lightning type, has an estimated candle-power of 25,000,000, which makes it the most powerful light in America, if not, indeed, in the whole world. The curvature of the earth cuts off its direct rays at 22 miles, but its beam has been observed in the sky to a distance of more than 80 land miles.

There is many an inspiring tale of the sea connected with Barnegat light, Absecon light, the lights that proclaim the capes at the mouth of the Chesapeake, and others to the south.

Cape Hatteras light has the distinction of being the farthest distant from the main shore of all American lights, and it is also the tallest lighthouse in the country. Spiral-painted like old-fashioned stick-candy, it is visible for many miles amid the storm-tossed waters of the North Carolina coast.

Off Hatteras there is a lightship that for the high seas and dangerous storms it must ride out is a rival of Nantucket vessel. It is the Diamond Shoals lightship.

Beyond Hatteras there are numerous great lights along the Dixie shores, each with an interesting history, each with a long record of service performed in warning craft to steer clear of the fighting zone between the water and the land. They, as well as gas buoys, fog signals, and many other warnings and guides to shipping while in the battle area, invite attention.

THE COAST AND GEODETIC SURVEY, THE WAR CORRESPONDENT

But however attractive their story, they must stand aside while some account is given of the work of the Coast and Geodetic Survey, which is ever a neutral war correspondent at the battle-front, chronicling every change in the battle-line and keeping its position up to the minute, lest shipping run upon a new bar without warning. With its ably-manned surveying vessels it journeys up and down the battle-front with an eye always out for shore changes, dangerous shoals, and such. Every skipper who sails the main may thus know where the mine-planters of the briny deep have been at work, and can steer clear of such fields.

WEARERS OF THE CROSS

In spite of all the warnings of light and bell and buoy; in spite of surveys and charts and mapped battle-fronts, there are still ships that will get into the danger zone and fall victims of the heavy artillery that sweeps the seas between deep water and the dry land. Shall they be left to perish with their crews and cargo? Not if the helping hand of Uncle Sam's coast guard can rescue them.

What tales these Red Cross men of the turbulent seas could tell! What hardships they endure! What perils they brave! To them the cry of distress in a storm-tossed ocean never goes up in vain. No bombardment of Neptune is ever so fierce that they will not dare it, no hope of a timely rescue is ever too slight to spur them on. The raging battle might as well be a blissful calm, for all its power to turn aside the life-savers from their stern duty. Aye, they may sink beneath the waves themselves, but to them even such a death is a lot infinitely preferred to life with an unheeded call from out the angry sea as a memory.

No one who has ever watched the sturdy life-savers man the lifeboat on an exposed shore and, against odds that seem insuperable, pull gallantly out into the tempest, can fail to appreciate either the stoutness of heart or the grandeur of purpose of these men. Where seemingly no boat could live, they manage to breast the storm, ride the billows, and reach the stranded vessel.

With a record of 1,500 instances of the rescues of lives and ships in a single year, it would seem invidious to single out one over another. A Sandy Hook station not long ago answered five calls in one day.

A Rhode Island station some time later saved 71 persons from the Portuguese brigantine *Est Thiago*. That vessel went

Photograph by George M. Chapin

AN ANCIENT BATTLE-FIELD: THE SAND-DUNE RAMPARTS OF SOUTHERN FLORIDA

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Photograph by William Reid

A MASS ASSAULT

As the seas retreat after an unsuccessful attack, they carry along in their flight many prisoners, wrested from the land army, that are never to be set free or exchanged

Photograph by George M. Chapin

AN OUTPOST OF PALMS STANDING GUARD AGAINST AN ATTACK OF THE SEA ON THE SOUTHERN FLORIDA COAST

ashore in a fog and was totally lost. A heavy surf was running when the brigantine struck, making the launching of a lifeboat to the rescue an exceedingly difficult and perilous undertaking. Moreover, the state of the sea, once a launching was effected, was such that a boat could not run alongside the vessel. Her masts were gone, some of the planks of her port side were missing, her starboard rail was under water, and debris was thrashing around everything on board as well as over the side.

Both crew and passengers were in extreme jeopardy, and in great panic were calling for help. The commander of the lifeboat watched his chance and in the brief period between seas ran in under the flying jib-boom. Following his directions, those on board crawled out on the boom and dropped into the boat.

The rescuers did not risk stopping long under the boom—only long enough at a time to get three or four persons. The time limit of safety reached, they would scud away with all speed, to avoid being swamped or capsized by a breaking sea.

WORK OF THE COAST GUARD CUTTERS

Nor can one overlook the coast guard cutter and its work. Under presidential orders, about a dozen of these vessels patrol assigned sections of the coastal waters from Eastport, Maine, to Cape Canaveral, Florida.

Provided with liberal supplies of food, water, and fuel, they put out to sea and cruise throughout the long winter months, ever vigilantly looking and listening for vessels in distress and for opportunities to be good friends in an hour of dire need.

One cutter covers the district between Great Egg Harbor, New Jersey, and Cape Hatteras.

The heavier the blows being struck by the sea the greater the need for these cutters to be on the watch. Ships aground, afire, in a collision, indeed any S. O. S. sends the cutters full steam ahead to the rescue. Now it may be a schooner, like the *Frederic A. Duggan*, in distress some 70 miles east of Nantucket Lightship, loaded with China clay, from Cardiff, half full of water, her provisions gone and her bottom so foul that only a gale could give her headway. Now it may be the *Bay State* on the rocks of Hollicom's Cove, Maine. Now the *Antilla* sends out an S. O. S. call that she is afire 120 miles east of Norfolk, and the *Onondaga* rushes to her rescue, and, finally, with other help, gets her into port, her cargo a total loss, but the ship saved. Or it may be the transport *Sumner*, which lost her bearings in a fog December 11, 1916, and went upon the rocks of Barnegat Shoals.

RED CROSS STATIONS

In viewing the Atlantic seaboard, one finds that the opposing forces in nature's unrelenting campaign have at least paused long enough to coöperate in the foundation of Red Cross stations in neutral territory. From Maine to Florida they have established, by mutual agreement, waters in which peace prevails—harbors where fleets may find haven while awaiting call.

Few stretches of coast line in the world have more of these stations. Maine with its Eastport, Belfast, Rockland, and Portland harbors; New Hampshire with its Portsmouth harbor; Massachusetts with the harbors of Newburyport, Gloucester, Salem, Lynn, Boston, New Bedford, and Fall River; Rhode Island with Newport, Providence, and Bristol harbors; and Connecticut with those of New London, New Haven, and Bridgeport, give New England many such bases of first importance.

Between the western nose of Long Island and the eastern projection of Staten Island, New York is given a harbor with an outlet that justifies its name of "The Narrows." Beyond lies the Upper Bay and above that the deep waters of the Lower Hudson and East River, giving the city more potential water front than any other municipality in the world. New Jersey has little to offer in harbors of first importance, except the one it shares with New York and those on Raritan Bay; but it joins with Delaware in forming Delaware Bay, with its ocean outlet for Philadelphia.

Further down the coast the land sank and invited the waters in through the Virginia capes to form harbors at Baltimore, Norfolk, Portsmouth, and Newport News. At Wilmington, N. C.; Charles-

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ton, S. C.; Savannah, Ga.; Jacksonville and Key West, Fla., are Red Cross stations of the first order, all directly or remotely built up by mutual consent of the warring elements, so that man, the innocent bystander, can seek safety when the front-line trenches become untenable for visitors.

THE SEA DOOMED TO DEFEAT

Such, briefly told, is the story of the great effort of the sea to bring the land under her dominion.

It is a warfare that has its lights and its shades, its tragedies and its joys. Furthermore, it is a warfare with striking analogies to the great conflict of democracy against despotism, and just as surely as the upheavals that raised the Piedmont plains above the sea drove the ocean back and set the American continent firm and strong, so will democracy rise up in its power and successfully vanquish its foe, however subtle, however persistent, however relentless that foe may be.

PRUSSIANISM *

By Robert Lansing, Secretary of State

THE American people by a gradual process of reasoning have reached the firm conviction that a German victory in the European struggle would result in the greatest of perils in this country and to those principles of government which have been ours since we became an independent nation. Whatever may have been our past judgments, we now realize the sinister character of Prussianism which has been manifested in this war.

And yet, with this realization of the truth, I find that many Americans, even among those intellectually equipped, have but vague ideas of the perverted mental attitude which made Prussianism possible, and of the reason why a compromise founded upon the Prussian conception of international rights must not even be considered.

THE RELATION OF PRUSSIANISM TO PEACE

To a man who thinks true in these days when passion or hysteria distorts opinions, Prussianism and the idea of an enduring and just peace among nations can never be brought into harmony. They can no more mingle than can oil and water. They are at the very antipodes of human thought. We should, then, comprehend the true meaning of Prussianism in order to understand the great obstacle today to a return to peace while Prussianism is still a power.

In considering the elements of Prussianism which made this war inevitable, we should also consider the relation of Prussianism to peace, the supreme desire of mankind, and its relation to war with all its suffering and destructiveness. The wastes of western Europe, the ships and corpses in the ocean's depths, the forest of crosses marking the graves of slaughtered men, the legions of torn and crippled humanity, and the wretched throngs of unhappy women and children are sad witnesses to the horrors of war. On these spectacles of brutality, misery, and desolation all civilized peoples gaze with anguish and bitterness.

As there comes an increasing realization of the needlessness of it all, indignation and anger burn in the hearts of men. But in spite of the bitterness aroused by these tragical scenes, they hope for peace, they pray for peace, and they look forward to that day when rest will come to this tormented world which has endured so much.

Yet, even as they hope and pray and search the future with yearning eyes, the armies and navies of democracy fight on with a grim determination which seems to contradict the hope and purpose of humanity.

* An address to Union College, June 10, 1918.

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Peace the world may seek with passionate longing, but not a peace which contains the seeds of future wars and future suffering. When an end comes to this great war, as it will come, it must result in a peace that is final and enduring.

"AN UNSTABLE PEACE WOULD BE A CURSE"

Surely mankind has not borne this burden of agony for naught. After all this woe and waste, a temporary and unstable peace would be a curse rather than a blessing.

A firm foundation must be found and is to be found in the frank and clear declaration by President Wilson of the aims which the Republic seeks in this war and which, with God's help, it will attain, whatever the cost may be. Nothing less will satisfy the American people; nothing less will content the democracies of the world.

The conditions which prevailed prior to August, 1914, produced this conflict. It is not, then, in a return to the *status quo ante* that lasting peace is to be found, though that, with domination of the Slavic peoples on their eastern borders, appears now to be the minimum terms of the Teutonic powers. To restore those pre-war conditions would be to invite a new disaster. Peace must rest on a more substantial basis, for the world seeks to have done with war and with conditions which produce war.

However long it may take, however great the sacrifice may be, physical might uncontrolled by morality must never again be considered a standard of international right. Justice must and will become the supreme force in human affairs. No other result will insure civilization against the evil passions which today convulse the earth.

THE BLOOD OF THE BRAVE NOT SHED IN VAIN

I do not believe—in fact, it seems to me to be unbelievable—that the blood of brave and devoted hearts, so generously poured out on land and sea in the cause of liberty, is being shed in vain, or that the vast treasures, wrested from the earth by man's enterprise and industry, are being wasted in the support of so sacred a cause.

But these lives and these riches have been wasted unless from the ashes of these sacrifices, which have been offered on the altar of liberty, there arises a peace which shall endure. It cannot be that the merciful Ruler of the Universe has permitted humanity to suffer all this without conferring a lasting blessing.

The conditions which brought on this war are rooted in the past and are not of sudden or spontaneous growth. They are the natural development of influences which have been long at work in Prussianized Germany and which the rest of the world ought to have perceived, but did not.

We can now with a clear vision look back through the history of Prussia and see the motives which inspired the conduct of her rulers. We can now read the words of Prussia's statesmen and of the masters of recent German thought with understanding minds.

THE CENTRAL THOUGHT OF PRUSSIANISM

We now recognize that the policies of the Imperial Government of Germany and the boasted "kultur" of the German people have been concentrated on the single purpose of expanding the territory and power of the Prussian Emperor of Germany until he, through the possession of superior force, became the primate of all the rulers of the earth. World dominion was the supreme object. That was and is the central thought of Prussianism.

It excited the cupidity of the governing and wealthy classes of the Empire and dazzled with its anticipated glories and by its promise of a boasted racial superiority the German millions who were to be the instruments of achievement.

Germans of high and low degree believed dominion over all nations to be the destiny of their race, and with a devotion and zeal worthy of a better cause turned their energies into those channels which would aid the ruling class in their plans to attain the summit of earthly power, Germany's vaunted "place in the sun."

I know that many Germans indignantly deny that this ambition for su-

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Photograph by A. E. Young

ALL THE RESOURCES OF OUR REPUBLIC ARE ENLISTED IN THE STRUGGLE TO PREVENT THE DOMINATION OF THE WORLD BY THE TEUTONIC EMPIRE

A freight steamer of the Great Lakes is doing its vital bit in transporting raw material to the munition plants, where shell and cannon are being manufactured to blast Germany's ruthless ambitions for world dominion.

premacy has inspired the conduct of the German Government or that it existed in the minds of the German people. I wish sincerely that it were so, for it would make the problems of the future far more easy of solution. But the numerous utterances of German thinkers and writers belie these defenders of Germany's purity of motive.

AN AMBITION TO BE "SUPERMEN"

It is hardly open to debate, in the light of subsequent events, that the philosophical and political ideas which have been taught for years from the university platforms, from the pulpits, and through the printed word to young and old in Germany excited in them an insolent pride of blood and infused into their national being an all-absorbing ambition to prove themselves "supermen," chosen by natural superiority and by divine mandate to be rulers of the earth.

Not only in Germany but among those of German descent in other lands has this pernicious belief spread, linking Germans everywhere to the "Fatherland" in the hope that they would be considered worthy to share in the future glory of the masters of the world.

A few examples of the teachings which have so molded German character and implanted in the German mind false conceptions of life will suffice to show their nature and the evil influences which they exerted on a people peculiarly susceptible to flattery and possessed by a selfishness which blunted their sense of honor and of moral obligation.

Professor Theuden, imbued with an astounding vanity, which is characteristically German, declared, as the great war began: "Germany, as the preponderant power in a Pan-German League, will with this war attain world supremacy." And Poehlmann, in considering the good to Germany which would result from the conflict, wrote to his fellow-countrymen, "We shall be an unconquerable people capable of ruling the world."

A SINISTER GERMAN CONFESSION

These words but described those visions which the German philosophers, acting possibly under the direction, and certainly with the approval, of their government, had so constantly conjured up to allure and tempt the German people. They were uttered before the greatPrussian war machine had failed in its first endeavor to plough its way through to Paris and in proving itself to possess the irresistible force in which its builders believed.

A decade before the war Reiner, inspired with the imperialism of Prussia, announced: "It is precisely our craving for expansion which drives us into the paths of conquest, in view of which all chatter about peace and humanity can and must remain nothing but chatter."

Not less ominous to liberty are the words of Professor Meinecke: "We want to become a world people. Let us remind ourselves that the belief in our mission as a world people has arisen from our originally purely spiritual impulse to absorb the world into ourselves."

Observe that extraordinary phrase: *"To absorb the world into ourselves."* To conceive such a national destiny is to resurrect the dead ambitions of an Alexander or a Cæsar; to teach it as a right to young men is to sow in their minds an egotism which breeds distorted conceptions of individual honor and justice and gives to them an utterly false standard of national life.

THE PRUSSIAN DOCTRINE: "AS WE WILL IT!"

Not alone from the lecturer and the essayist came this idea that the Germans are a superior race, set apart to rule the world. It was preached in the pulpits as a divine truth by those who even had the effrontery to support their assertions by references to the Holy Scriptures. Listen to some of the thoughts proclaimed by ordained ministers of Christ to their German congregations:

"It may sound proud, my friends, but we are conscious that it is also in all humbleness that we say it: the German soul is God's soul; it shall and will rule over mankind."

May we be spared the consequences of German "humbleness," which fairly struts and swaggers and which finds further expression in the words of another doctor of divinity, when he declares:

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AMERICA'S APPEAL TO PATRIOTS WAS NOT IN VAIN

"The only way to stay the onrush of blood and desolation is to prove conclusively that the Prussian masters of Germany do not possess the physical might to impose their will on the human race."

"Verily the Bible is *our* book. It was given and assigned to *us*, and in it we read the original text of *our* destiny, which proclaims to mankind salvation or disaster, *as we will it*."

"As we will it!" There, in four words, is the whole story of the Prussian doctrine of the "superman," of a "place in the sun," of "world dominion." What a combination of sacrilege and vanity to assume that the Almighty would confer on a people such as the Prussians have shown themselves to be divine powers on earth!

These are enough, though many more might be given, to show the monstrous ideas which have for a generation been poured into the receptive minds of a stolid, stubborn people, unhabituated to

think for themselves, who have, through these ideas, become fairly saturated with the belief in their invincible power, in their racial superiority, and in God's selection of them, or rather their rulers, to be His partners in governing the world.

"WE ARE THE HAMMER OF GOD"

Side by side with the egotistical conception of the Prussians that they have a monopoly on the favor and power of the Creator, there is another which is utterly savage and unchristian. While it has been variously expressed by the materialists of this generation, Felix Dahn forty years ago uttered the naked thought, which has since been interpreted into action by German militarism.

Thus wrote the poet: "It is the joyous German right with the hammer to win land. We are of the Hammer God and mean to inherit his empire." That is, the earth.

This deification of brute force, with the attendant right of the strong to be masters of the weak, touched a responsive chord in the Prussian mind, and was by some paradoxical process welded to the so-called Christian philosophy of Prussia's theologians.

Thus Thor and Odin stalk again along the shores of the Baltic summoning the tribesmen to battle. Their blood-stained altars have again burst into flame in the hearts of the Prussians. Their fierce priesthood again clamor for victims. In the place of a god of love and mercy the Teutons of the north have raised on high their ancestral gods of brutality and war.

Paganism, tinctured with modern materialism and a degenerate type of Christianity, broods today over Germany. Christian ministers have proclaimed Jehovah to be the national deity of the Empire, a monopolized "German God," who relies on the physical might of His people to destroy those who oppose His will as that will is interpreted by His chosen race. Thus the Prussian leaders would harmonize modern thought with their ancient religion of physical strength, through brutalizing Christianity.

Minds filled with such conceptions of the sacredness of conquest and of the divine right of a ruler to command obedience have furnished fertile soil for the Prussian policy of acquiring territory and mastery by brute force, regardless of justice, morality, or the rights of others.

This strange mental slavery of a people as highly developed intellectually as the Germans is one of the most extraordinary psychological phenomena of modern times. It is hard to analyze it, and even harder to find for it a plausible explanation.

In such congenial environments the ideas of the absorption of Belgium and the Netherlands, of the Germanizing of the Scandinavian and Slavic countries, of Mittel-Europa, and finally of a world empire greater even in relative extent than that of Macedon or Rome, germinated and thrived.

VAST INTRIGUE SET AFOOT

To make ready for the year and the day when these extravagant dreams of conquest were by force of arms to be made realities and when all nations would be subjugated by the imperial power of Germany, absorbed the thought and dictated the acts of the Prussians who had so successfully subdued their Germanic neighbors, at first physically and later mentally, until they belonged body and soul to their war lords.

With this vast ambition in their hearts, the rulers of Germany sent forth swarms of agents throughout the world to create, in so far as they were able, conditions favorable to the great enterprise. Some sought to win the good will of the nations to which they were sent; others to alienate or weaken the friendships between nations whose alliance or mutual support the German Government feared would constitute a possible obstacle to its great scheme of world conquest.

Sincere and honest, the governments against which these intrigues were directed believed the Imperial German Government to possess a character like their own. Naturally trustful, they fell victims to the snares set to entrap them. There seems to have been no depths of infamy which the Germans did not sound in carrying out their foreign policy of deception.

In what a new light many events of the past appear when the truth becomes

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HE GOES FORTH TO FIGHT FOR THE SAFETY AND HAPPINESS OF FUTURE GENERATIONS

"As the world hopes and prays and searches the future with yearning eyes, the armies and navies of democracy fight on with grim determination."

known! The "Yellow Peril" speech of the Kaiser, the wholly unjustified suspicions of imperialistic designs on the part of the United States whispered artfully among nations of South America, the financial schemes and revolutions promoted secretly by Germans in the Caribbean countries, the encouragement of continued turmoil and anti-American feeling among warring factions in Mexico, and the propaganda of distrust and hostility carried on in this country and in Japan are among the things "made in Germany" directly affecting the international relations of the United States.

It is only within a comparatively recent time that we were fully convinced of their origin and gave them their true labels. Yet, because we were so innocent and trusting, the unpleasant truth comes as a greater shock and excites a deeper resentment.

In addition to these practices, which had been in operation long before the great war and were preliminary to that supreme event in the Prussian plan, I might refer to the plots which, after the war began and while this country was still neutral, were directed, approved, or financed by Count Bernstorff, Von Papen, Boy-Ed, Luxburg, Von Eckhardt, and other official representatives and secret agents of the Berlin Government. But the activities of these men have been exposed and their disgraceful record is common knowledge, arousing a just indignation throughout this country.

WATCH LONG KEPT ON GERMAN CONSPIRATORS

I think that I might say, however, that for a long time before it was considered wise to make the facts public the American Government, possessing evidence of their improper conduct, kept constant watch over these conspirators, who depended upon the innocent credulity of "those idiotic Yankees," as Captain Von Papen sneeringly called us.

These complacent plotters little suspected how much was known of the activities of the German embassy in Washington, the military agency in New York, the consulates in various cities, and the numerous spies in German employ by those whom they thought they were deluding. These agents credited the miscarriage of many of their schemes to chance, which had they known the true cause would have given them some very indigestible food for thought.

In view of this spirit of hypocrisy and bad faith, manifesting an entire lack of conscience, we ought not to be astonished that the Berlin foreign office never permitted a promise or a treaty engagement to stand in the way of a course of action which the German Government deemed expedient. I need not cite as proof of this fact the flagrant violations of the treaty neutralizing Belgium and the recent treaty of Brest-Litovsk. This discreditable characteristic of the German foreign policy was accepted by German diplomats as a matter of course and as a natural, if not a praiseworthy, method of dealing with other governments.

AN AMAZING INSTANCE OF BAD FAITH

Frederick the Great, with cynical frankness, once said: "If there is anything to be gained by it, we will be honest. If deception is necessary, let us be cheats." That is, in brief, the immoral principle which has controlled the foreign relations of Prussia for over a hundred and fifty years.

It is a fact not generally known that within six weeks after the Imperial Government had, in the case of the "Sussex," given to this government its solemn promise that it would cease ruthless slaughter on the high seas, Count Bernstorff, appreciating the worthlessness of the promise, asked the Berlin foreign office to advise him in ample time before the campaign of submarine murder was renewed in order that he might notify the German merchant ships in American ports to destroy their machinery, because he anticipated that the renewal of that method of warfare would in all probability bring the United States into the war.

How well the ambassador knew the character of his government, and how perfectly frank he was. He asked for the information without apology or indirection. The very bluntness of his message shows that he was sure that his superiors would not take offense at the assumption that their word was valueless

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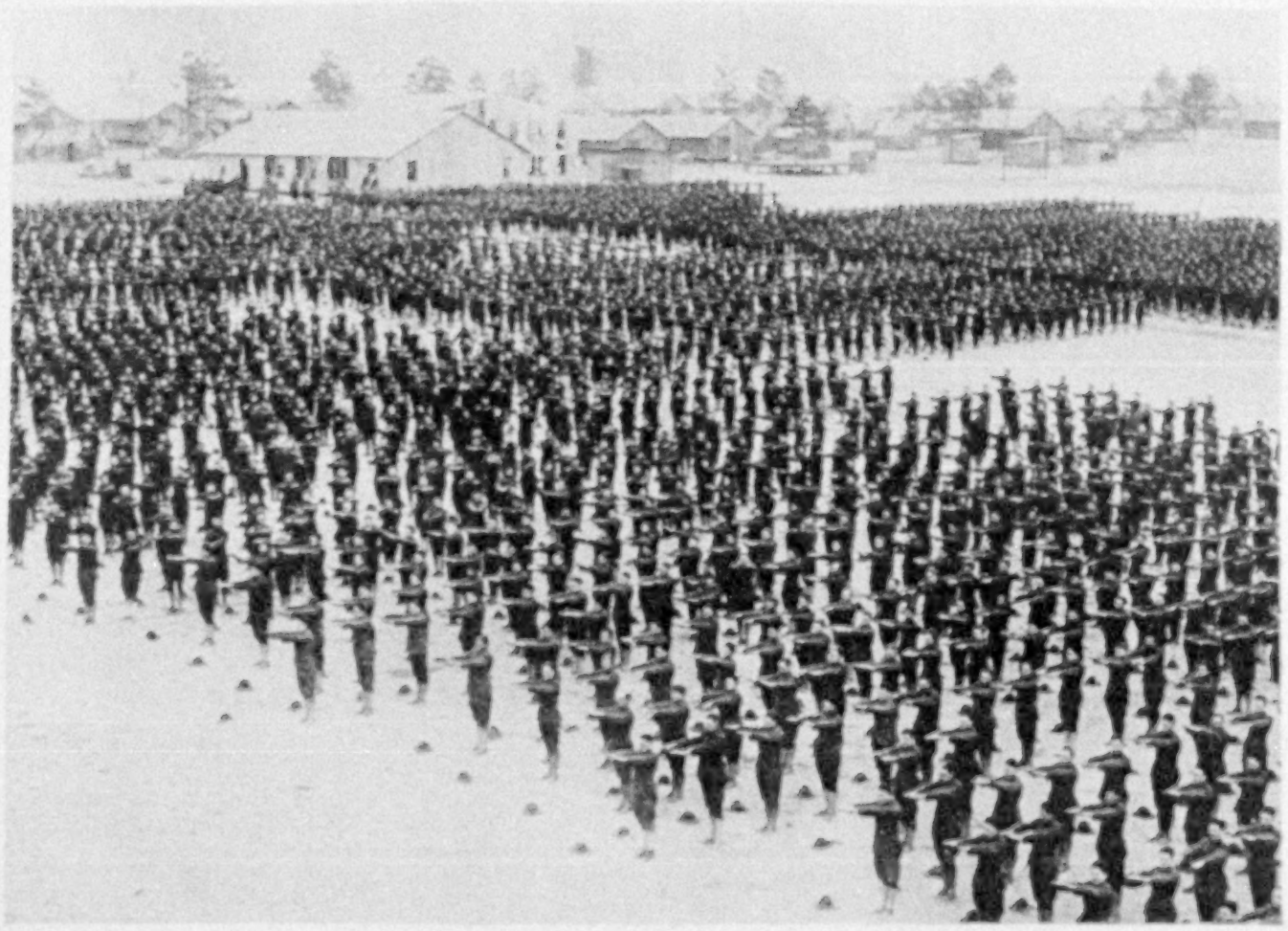

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"THE WORLD MUST HAVE A PEACE THAT WILL MAKE NEEDLESS THE MARSHALING OF ARMIES"

and had only been given to gain time, and that, when an increase of Germany's submarine fleet warranted, the promise would be broken without hesitation or compunction. What a commentary on Bernstorff's estimate of the sense of honor and good faith of his own government!

DECEIVED BY MILITARY CLIQUE OF BERLIN

Before this war began we would not have thought any government on earth capable of such indifference to truth. We admit that we have been the dupes of the military clique in Berlin, because dishonesty of this sort seemed to us inconceivable in these days of international honor and Christian civilization. But I believe that the nations, and I am certain that the United States, will never again be caught in a net of duplicity equal to that which was spread all over the world by the Berlin Government. We have learned our lesson and it has cost us dear. We will never have to learn it again.

In this consideration of Prussianism, with its pagan philosophy and its perversion of the German mind, I shall not attempt to enter upon a recital of the horrible brutalities perpetrated by the German armies in the prosecution of the war. They have been too often told to require repetition. It would be the needless reading of a catalogue of black deeds of cruelty, which would sicken a tiger, by a nation which claims not only to be moral and possessed of humane sentiments, but to be actually commissioned by the Supreme Being to carry out His will.

I only mention them here as a further manifestation of the revival in Germany of the adoration of brute strength and pitiless war and of the subordination of every noble instinct to the heartless materialism of the ruling class, who seek only power and possessions without regard to the means by which they are

attained. In a word, to show what Prussianism means when translated into action.

GOETHE'S ESTIMATE OF THE PRUSSIANS

But we ought not to be surprised at these terrible manifestations of frightfulness, in view of the past record of Prussia. It was Goethe, I think, who said, "The Prussians are naturally cruel; civilization will make them ferocious." It has made them ferocious. Acquired science merely gave them increased ingenuity in the indulgence of their passion for cruelty.

Let me read you an extract from an article which appeared in the *Fortnightly Review* of February, 1871; and, as I read, remember this was written of the German invasion of France nearly half a century ago. It might have been written in February, 1915, so truly does it portray Prussianism as we know it today:

"For six months one-third of France has been given up to fire and sword. For 300 or 400 miles vast armies have poured on. Every village they have passed through has been the victim of what is only an organized pillage. Every city has been practically sacked, ransacked on system; its citizens plundered, its civil officials terrorized, imprisoned, outraged, or killed.

"The civil population has been, contrary to the usage of modern warfare, forced to serve the invading armies, brutally put to death, reduced to wholesale starvation and desolation. Vast tracts of the richest and most industrious districts of Europe have been deliberately stripped and plunged into famine, solely in order that the invaders might make war cheaply.

"Irregular troops, contrary to all the practices of war, have been systematically murdered, and civil populations indiscriminately massacred, solely to spread terror. A regular system of ingenious terrorism has been directed against civilians, as horrible as anything in the history of civil or religious wars.

"Large and populous cities have been, not once, but twenty, thirty, forty times, bombarded and burnt, and the women and children in them wantonly slaughtered, with the sole object of inflicting suffering. All this has been done, not in license or passion, but by the calculating ferocity of scientific soldiers."

And yet the world, in spite of this hideous picture of Prussianism, failed to read the truth or to profit by it. Today the beast is again at large, devouring the helpless victims who fall into his power. Has not the time come to end this fiendishness?

Much as enlightened mankind may revolt at the idea, the only way to stay this onrush of blood and desolation, which is the direct consequence of the mad impulses which now hold sway over the German mind, is to prove conclusively that the Prussian masters of Germany, though they are armed with the full strength of the Empire and of its subservient allies, do not possess the physical might to impose their will on the human race, that the ancient gods of the Teutons are false gods, and that the philosophy which has cast over the German people a robe of superior attributes is the product of a consuming vanity and pride.

This idea is distasteful, as it should be, to a world which loves peace and craves repose, because the only instrument which can be employed is force of arms. It means war, unceasing war, until the arrogant and brutal Prussians are humbled, until the Kaiser and his military chieftains despair of their ambitions, until the German people realize that their insolent lords are not touched by divine fire and do not have at their command the powers of heaven.

THE WORLD NEVER AGAIN TO BE VICTIMIZED BY PRUSSIAN PERFIDY

The great free nations of the globe have the task laid upon them to destroy the spirit of Prussianism. This they must accomplish if they would preserve for the future those rights of man which it has taken centuries of struggle to wrest from the grasp of despotism.

If the German Government as it is now constituted should succeed to any extent in its purposes, or even if it should not be defeated in the present war, the doctrine and hopes which are now dominant over the German people will not die. Peace under such conditions could hardly

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SOLDIERS OF OUR NATIONAL ARMY TRAINING TO THWART THE DREAM OF PAN-GERMANISM

"Peace the world may seek with passionate longing, but not a peace which contains the seeds of future wars and future suffering. When an end comes to this great war, it must result in a peace that is final and enduring."

mean more than a brief respite from bloodshed, an unstable truce, during which the Prussian rulers of the Central Powers would devote their energies to preparing for another onslaught on democracy and liberty, for another attempt to win world sovereignty.

It is true that the free peoples of the earth would never again be found as unprepared as they were before this war to meet a militant Germany and would never again be victimized by German intrigue and perfidy. Every government would look to that. But such a state of uncertain peace would compel the whole world to remain under arms in anticipation of German aggression. The resources of the nations, already so heavily taxed by this war, would have to be further burdened for the maintenance of great military and naval establishments. Peace would be in constant jeopardy because it would depend on the belief of Germany's rulers as to their ability to succeed in a new essay of conquest.

It is not such a peace as that which will satisfy the longing of the world. It seeks and must have a peace which will silence for the future the clash of arms and will make needless the marshaling of armies and the assembling of navies—a peace so secure and so certain that man's energies may be safely devoted to the productive and not the destructive pursuits of life, and nations may develop without fear of becoming the prey of foreign aggression.

This great war must end with a decision which will be a blessing and not a curse to the present generation and to future generations. Prussianism, with its distorted ideas, its false conceptions, and its intolerable cruelties, must be brought to an end. The Germanizing of other countries must cease. The dream of "Hamburg to the Persian Gulf" and of an enslaved Poland and Russia must be dispelled.

German diplomacy and intrigue, as now practiced, must be proclaimed an international crime and suppressed forever.

The philosophy of the "superman" and of world mastery must die discredited. The evil influences which have so long poisoned the minds of the German people must lose their potency.

Until these great objects are accomplished, as they will be when the war aims stated by the President are attained, we must go on with the war. There is no other way. Peace without a radical change in present conditions, or even in those conditions preceding the war, would be interpreted by the German people as a vindication of Prussianism. The German Empire would continue to accept its doctrines and to menace the world.

We must go on with the war, intensifying our efforts and expending all our energies and resources, if need be, to obtain the great purpose for which we strive. This task must not be left half done. We must not transmit to posterity a legacy of blood and misery. The world must be made a safe place in which nations and individuals may live free and happy lives.

We must go on with the war until the desire of the nations is satisfied and until human liberty is forever freed from the peril which will continue so long as greed and ambition and blood lust dominate the German Empire, so long as Prussianism is supreme in the mind of the German people.

A MIGHTY CRUSADE

We may in this great conflict between civilization and savagery go down into the valley of shadows because our foe is powerful and inured to war. We must be prepared to meet disappointments and temporary reverses, but we must, with American spirit, rise above them. With courageous hearts we must go forward until this war is won.

Closely associated, as I have been in these critical days, with our great leader, Woodrow Wilson, I have been more and more impressed with his wise judgment, with his stern determination to lead democracy to victory, and with his utter confidence in the unity and splendid spirit of the nation.

Let us, as loyal citizens of the Republic, serve in this mighty crusade against Prussianism, confident, as our President is confident, that the righteousness of our cause and the courage and tenacity of the American people will carry this war through to victory and to peace.

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THE BLACK SHADOW WHICH THE DREAM OF PAN-GERMANISM CASTS OVER THE WORLD

According to the openly professed aspirations of German statesmen and would-be empire builders, the Germany-Over-All of their dreams embraces an area of 29,000,000 square miles—more than one-half of the land area of the world. This territory which they covet is inhabited by three-fourths of all the people on earth. But even these wild dreams do not tell the whole story of the Prussians' lust for empire and power; they also aspire to the domination of the United States and what remains unconquered of all Russia, adding 11,000,000 square miles of territory and 215,000,000 people (see the shaded portion of the map). All these lands and peoples are sought by means of the sword that was drawn in dishonor and will be sheathed in shame.

GERMANY'S DREAM OF WORLD DOMINATION

By the Editor

PALTRY indeed seem the dominions of all the tyrants of the past, who attempted to "wade through slaughter" to the throne of world empire, compared with the vaulting ambition of the Hohenzollerns for Prussianizing the earth, as seriously proposed by statesmen, diplomats, and military experts of Germany during the last few years.

Our talented Secretary of State, Mr. Robert Lansing, in the preceding article has revealed the mental attitude of autocratic Prussia toward the remainder of the world. Supplementary to that revelation, it is worth while to recall some of the concrete utterances of Pan-Germans concerning their specific aspirations.

Ridiculous and grotesque would be the claims of these apostles of Germany-Over-All were it not for the fact that such extravagant preachments to the German people have brought about a debauch of blood, rapine, and destruction the like of which has never before afflicted mankind.

The accompanying map of the world tells the story of Germany's all-grasping aims. The areas in black are her own and those lands of her neighbors which she covets.

At the time that Germany plunged the world into war four years ago, the area of her empire in Europe was 208,780 square miles—larger than that of any other nation in continental Europe save her vassal, Austria-Hungary, and Russia. She had a population at home of nearly 70,000,000, while her colonial empire, exceeding a million square miles, had an additional population of more than 14,000,000.

But she was not content. These possessions must be but the core of the great sphere of dominions which she would accumulate in a rolling tide of blood conquest!

GERMANY'S DREAM

Germany claims as her right (through her spokesmen, the leading citizens of the empire), the following:

All of Europe save Portugal, Spain, the uninvaded portion of France, the British Isles, and the as yet unconquered portions of Russia. In brief, she wants in Europe 1,196,000 square miles of the total continental area of 3,872,000 square miles and 270,000,000 of the 464,000,000 inhabitants.

All of South America save the two inconsequential colonies of British and French Guiana. Her aspirations in this sphere include more than 7,400,000 square miles of the total continental area of 7,570,000 square miles and 55,421,200 of the total population of 55,779,000.

In Africa her modest claims embrace 6,840,000 square miles of the total area of 11,622,000 square miles, leaving less than 5,000,000 square miles, largely desert, for her sister nations. The territory which Germany claims in this part of the world maintains a population of 85,000,000 inhabitants, compared with only 57,000,000 for the remainder of the continent.

Considering the extent of the continent, Germany's Asian aspirations would seem amazingly conservative *for her*, were it not that much of the land to which she waives claim is, like that in Africa, an unproductive waste. With Russian Turkestan, India, China, vassal Turkey, and the Mohammedan realms of Persia and Afghanistan—the areas which she wants—the Central Empire would have 5,662,000 square miles of this continent, sustaining a population of approximately 775,000,000. And there should be added to these figures the Dutch East Indies, Germany's by right of the might of larger nations over smaller neighbors—735,000 square miles and 48,000,000 people.

All of Australia, with an area of 2,974,581 square miles and a population of nearly 5,000,000. Teuton expectations in this continent have been revealed very recently in the unblushing confessions of Herr Thysson, who is quoted elsewhere in this article.

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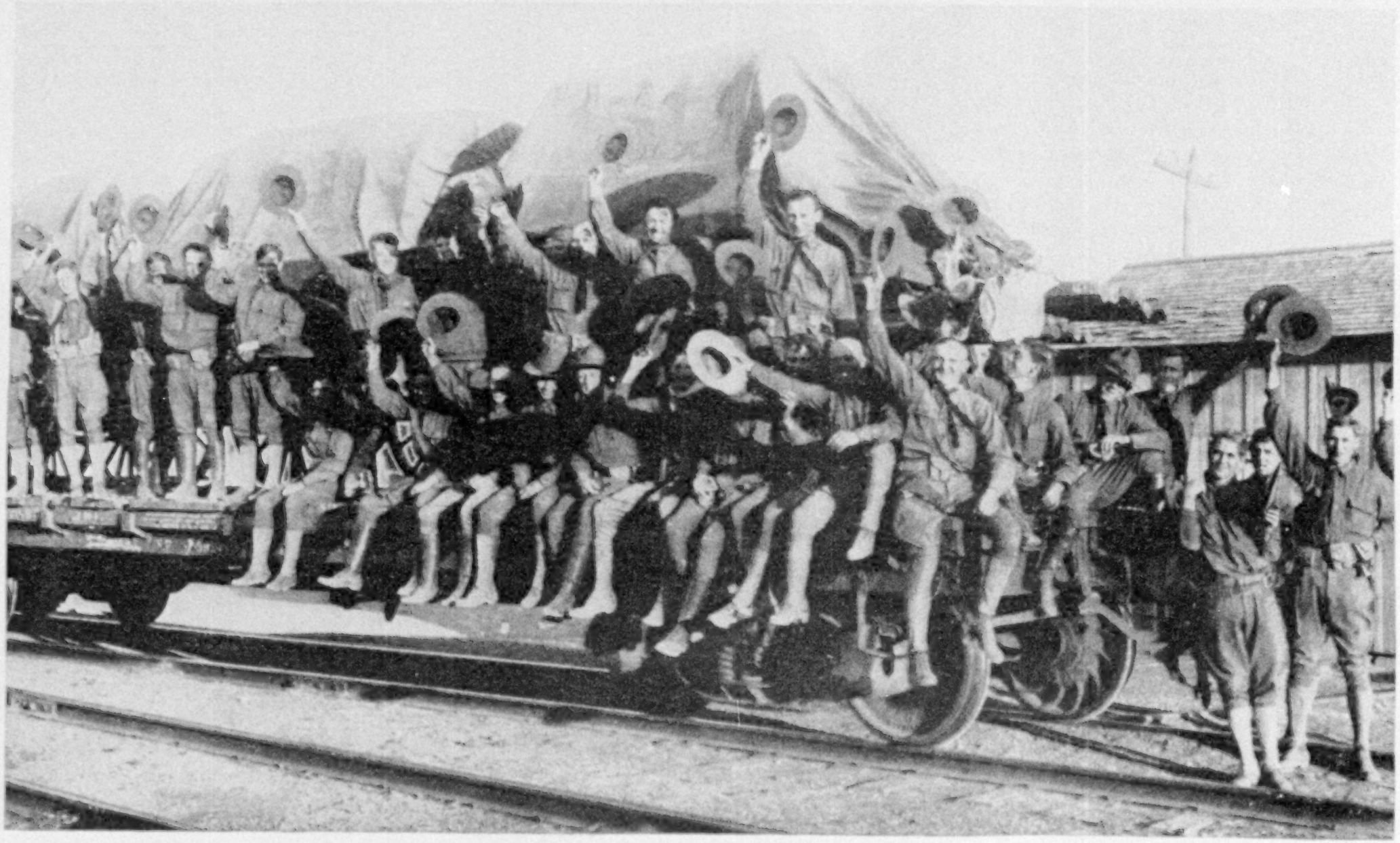

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SOLDIERS OF AMERICA: DISCIPLES OF WORLD PEACE, OF HUMANITY AND JUSTICE

"It is unbelievable that the blood of brave and devoted hearts, so generously poured out on land and sea in the cause of liberty, is being shed in vain."

ASPIRATIONS IN NORTH AMERICA

Of North America the Pan-Germans profess to covet only Cuba, Central America, and Canada at the present time, but some of her futurists see "the American people conquered by the victorious German spirit, so that in a hundred years the United States will present an enormous German Empire." However, Cuba, the Central American republics, and the British Dominion would add 13,500,000 to the population of Germany-Over-All and an area equal to more than 18 times her European empire at the outbreak of the world war.

Thus it will be seen that the lands and peoples which German statesmen and would-be empire builders actually claim as their right equal 29,000,000 square miles, or more than one-half of the earth's surface, and 1,245,000,000 inhabitants—three-fourths of all the people on the globe.

If we should add to these figures the United States, concerning which certain bold Teutonic spirits have already expressed themselves, and the Russian Empire, which Germany undoubtedly will subjugate unless America and the Entente Allies crush her, the grand total of Kulturland would be 40,000,000 square miles, more than 70 per cent of the earth's land area, and 1,459,000,000 people, all the human beings who breathe save 237,000,000.

What a Gargantuan structure compared with the pigmy Roman Empire in its most extensive hour, under Trajan, when its subjects numbered a hundred million and the word of its Emperor was law over 1,971,000 square miles! And how Alexander would have wept with chagrin at the puny confines of his 2,170,000 square miles of territory in the light of this Brobdingnagian German dream of conquest!

THE KAISER'S WORSHIP OF RUTHLESS CONQUERORS

And by far the most diabolical aspect of this craving for world power is the fact that it has never occurred to the Prussian mind to acquire influence through helpfulness to others. Always it is the sword of the conqueror which beckons the Kaiser. This assertion is not inferential; it is based on the avowed statement of the German war lord himself, who boasts thus:

"From childhood I have been influenced by five men—Alexander the Great, Julius Cæsar, Theodoric II, Frederick the Great, and Napoleon. Each of these men dreamed a dream of world empire. I have dreamed a dream of German world empire and my mailed fist shall succeed."—From Ambassador Gerard's "Face to Face with Kaiserism," page 16.

Each of those paragons of power, which Wilhelm II keeps enshrined in his heart, had as his sole object in life the glorification of self at the expense of mankind, and the attitude of each toward justice and moral law was the same as that of German leaders today, as so shamelessly admitted by Prince von Buelow in an address before the Reichstag on December 13, 1900, when he declared, "I feel no embarrassment in saying here, publicly, that for Germany *right* can never be a determining consideration."

Here are the words of her statesmen, captains of industry, and publicists, which prove the iniquity of Germany's all-embracing covetousness:

HERR THYSSON'S AMAZING CONFESSION

"I was personally promised a free grant of 30,000 acres in Australia and a loan from the Deutsche Bank of £150,000, at 3 per cent, to enable me to develop my business in Australia. Several other firms were promised special trading facilities in India, which was to be conquered by Germany, be it noted, by the end of 1915. A syndicate was formed for the exploitation of Canada. This syndicate consisted of the heads of 12 great firms; the working capital was fixed at £20,000,000, half of which was to be found by the German Government.

"Not only were these promises made by the chancellor; they were confirmed by the Emperor, who on three occasions addressed large private gatherings of business men in Berlin, Munich, and Cassel in 1912 and 1913. I was at one of these gatherings. The Emperor's speech was one of the most flowery orations I have listened to, and so profuse

were the promises he made that, were even half of what he promised to be fulfilled, most of the commercial men in Germany would become rich beyond the dreams of avarice.

"The Emperor was particularly enthusiastic over the coming German conquest of India. 'India,' he said, 'is occupied by the British. It is in a way governed by the British, but it is by no means completely governed by them. We shall not merely occupy India; we shall conquer it, and the vast revenues that the British allow to be taken by Indian princes will, after our conquest, flow in a golden stream into the Fatherland. In all the richest lands of the earth the German flag will fly over every other flag.'"—HERR AUGUST THYSSON, Germany's greatest steel manufacturer, in a pamphlet wherein he confesses his complicity in an Imperial plot formulated in 1912 to plunge the world into war for Germany's profit.

TANNENBERG'S FORECAST

"Holland, together with her royal family, her European possessions, and her colonies in South America, the Indian Islands, and Australasia, must become the ally of Germany.

"It would form the nucleus of a colonial world empire, if to East Africa, the Cameroons, and southeast Africa we could add Angola and the Congo. As a connecting link with the Cameroons, the French Congo might also be included—7,500,000 square miles, in addition to our 2,265,560. This might justly be called a world empire rich in the productions of tropical flora; the Congo, one of the largest rivers in the world—a colonial possession comparable to England's five—a beginning, by means of which the German nation may finally attain the position to which it is entitled by reason of its importance in the Council of Nations.

"Germany must also have a share in this worship of greatness, and will, under the guise of economic exploitation and protection, win back to 'Kultur' the Asiatic possessions of Turkey, both for her own benefit and the good of the natives.

"To Germany falls, in southeast Asia, yet another possession, namely, the islands of the Indian Ocean, which, next to British India, form the most valuable colony in the world.

"In order to maintain the balance of power, Germany will be compelled to bring under her sway the largest possible stretch of land in the basins of the two Chinese rivers—the Hwangho and the Yangtsze-kiang.

"In Central America we Germans have let slip the opportunity for obtaining Cuba.

"I have touched upon these incidents in South Africa merely to enforce the point for our future guidance in South America, that it will but be a blessing for the peoples of the republics when they pass from the effects of their Portuguese-Spanish heritage under German rule.

"Germany must lay hands upon Central Africa, from the mouth of the Orange River to Lake Chad, from the Cameroons Mountains to the mouth of the Rovuma; she must seize Asia Minor and the Malay Islands, in southeast Asia, and, lastly, the southern half of South America. . . .

"These regions (Asia Minor, Syria, and Mesopotamia) might become for us what Egypt is for England—that is to say, not only an important outlet for the products of our national industry, but also a starting point from which we may extend toward eastern Asia and Africa."—TANNENBERG, in *Gross Deutschland*.

"PLANT OUR FOOT WHERE IT APPEARS IMPORTANT"

"Should it be necessary to increase our territory in order that the greater body of the people should have room to develop, then in that case we will take as much land as would appear to be necessary. We will also plant our foot where it appears important to us on strategic grounds to do so in order to maintain our impregnable strength. Thus if it is of any use to our position of strength in the world, we will establish stations for our fleet—for example, Dover, Malta, and Suez."—WERNER SOMBART.

"We must create a Central Europe, which will guarantee the peace of the entire continent from the moment when it

shall have driven the Russians from the Black Sea and the Slavs from the south and shall have conquered large tracts to the east of our frontiers for German colonization."—PAUL DE LAGARDE, in *Deutsche Schriften.*

"Denmark, as commanding the approaches to the Baltic, is of great military importance to us."—General VON BERNHARDI, in *Germany and the Next War.*

"Our Central Europe enlarges and secures the northern countries by sea-power and secures and enlarges the southern countries by land power; and unites both parts, Orient and Occident, in one vital, manifold, single organism, thanks to imperative geographical law."—ERNST JACKH, in *Deutsche Politik* (June 16, 1916).

". . . the supreme importance to us of keeping open, at all costs, the passage through the Sound and the Great Belt. The command of these straits will not only secure the Baltic basin for us, but also keep open the sally ports for our offensive operations against the English blockading fleet."—General VON BERNHARDI, in *Germany and the Next War.*

"Pan-Germanism absorbs also the Scandinavians."—ERNST HASSE, in *Zwanzig Jahre Alldeutscher Arbert.*

"We require those new Dutch territories, already fertilized by German blood, for the indispensable expansion of our economic dominion. On the Rhine, which has become German to the mouth, we need a free traffic, which the silent resistance of Holland now hampers."—FRITZ BLEY, quoted by Andler, *Pan-Germanism.*

"ALL FOREIGN INFLUENCE IN MIDDLE EUROPE MUST BE ELIMINATED"

"The future territory of German expansion, situated between the territories of the Eastern and Western Powers, must absorb all the intermediate regions; it must stretch from the North Sea to the Baltic; from the Netherlands, taking in Luxembourg and Switzerland, down to the islands of the Danube and the Balkan Peninsula, and would include Asia Minor as far as the Persian Gulf. All foreign influence must be eliminated."—ERNST HASSE, in *Weltpolitik.*

"We will annex Denmark, Holland, Belgium, Switzerland, Livonia, Trieste, Venice, and the north of France from the Sombre to the Loire. This program which we propose is not the work of a madman, nor is this empire which we wish to found a Utopia. We have already in our hands the means of realizing it."—General BRONSART VON SCHELLENDORF, former Minister of War.

"Decrepit States like the Argentine and Brazilian republics, and more or less all those beggarly States of South America, would be induced either by force or otherwise to listen to reason."—FRIEDRICH LANGE, in *Reines Deutschtum.*

"Should Belgium take part in the war, it must be struck off the map."—RUDOLPH THEUDEN, in *Was muss uns der Krieg bringen.*

"Germany, Austria-Hungary, and Italy, bound together by economic interests in Central Europe, form a great domain which would be very happily rounded off by the adhesion of Switzerland, Belgium, and Holland in the West and of Poland and Lithuania in the East."—PAUL DEHN, in *Deutschland unter der Orient.*

"It is sad to reflect that neither Paraguay nor Argentina belongs, even in part, to Germany today."—Professor JOHANNES UNOLD, of Munich.

"A MAGNIFICENT FIELD FOR GERMANY"

"The East is the only territory in the world which has not passed under the control of one of the ambitious nations of the globe. Yet it offers the most magnificent field for colonization; and if Germany does not allow this opportunity to escape her, if she seizes this domain before the Cossacks lay hands upon it, she will have secured the best share in the partition of the earth. The German Emperor would have the destinies of Nearer Asia in his power if some hundreds of thousands of armed colonists were cultivating these splendid plains; he might and would be the guardian of peace for all Asia."—A. SPRENGER, in *Babylonien*

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Photograph by E. Niebergall

EVERY INCREASE IN THE FOOD SURPLUS OF AMERICA IS AN AID TO DEMOCRACY AND A BLOW AT AUTOCRATIC POWER

"Justice must and will become the supreme force in human affairs. No other result will insure civilization against the evil passions which today convulse the earth."

das reichste Land in der Vorzeit und das lohnendste Kolonisationsfeld fur die Gegenwart.

"All Morocco in the hands of Germany; German cannon on the routes to Egypt and India; German troops on the Algerian frontier—this would be a goal worthy of great sacrifices."—MAXIMILIAN HARDEN, in *Zukunft*, July 29, 1911.

"THE STORM FLAG OF THE EMPIRE"

"Now we know what the war is for. It is to hoist the storm flag of the empire on the narrow channel that opens and locks the road into the ocean. . . . We shall remain in the Belgian Netherlands, to which we shall add the thin strip of coast up to the rear of Calais. . . . From Calais to Antwerp, Flanders, Limburg, Brabant, to behind the lines of the French forts—Prussian. The southern triangle with Alsace-Lorraine and Luxemburg. We need land for our industries, a road into the ocean. . . . Never was there a war more just. It shall, it must, it will conquer new provinces for the majesty of the noble German spirit."—MAXIMILIAN HARDEN, in *Zukunft*, December, 1914.

"If Central Europe comes to nothing, then we shall indeed have Central Africa. Central Europe, on the other hand, without Central Africa cannot be contemplated for a moment."—Dr. PAUL LEUTWEIN (son of a former Governor of Southwest Africa), in *Europaische Staats-und Wirtschafts-Zeitung*.

"Germany's requirements come to this: it must stick to the position it has won at the southwest entrance of the North Sea (Antwerp) and must acquire the Suez Canal."—Vice-Admiral HERMANN KIRCHHOFF, in same journal.

"THE GIFT OF A VICTORIOUS WAR"

"We must think of a way, if we are to maintain ourselves as one among the world nations. This way has already been found in process of the war. It is called Association (Genossenschaft)—political, national, military, economic Association. The original nucleus of the Association is Central Europe (Germany plus Austria-Hungary); Poland, too, belongs to it by nature. The Near East is brought in to supply us both with (1) foodstuffs and (2) raw materials. A connecting bridge is also needed between Central Europe and the Near East. And there it is—Bulgaria."—PAUL ROHRBACH (of German Colonial Office), in *Deutsche Politik*, May 19, 1916.

"A victorious war . . . would give us the Belgian Congo, the French Congo, and, if Portugal continues to translate her hostile intentions toward us into actions, would also give us the Portuguese colonies on the east and west coasts of Africa. We should then have a colonial empire of which our fathers, who used to smile slyly at our first essays in colonization, could never have dreamt. But the most important factor in this probable partition of the African world is that we should have thereby put an end to the English attempts at dominion from the Cape to Cairo. Between Egypt, which is still English, and Anglo-Boer South Africa would stretch the immense band of our colonial possessions, extending from the Indian Ocean to the Atlantic. Still English, we say advisedly of northeast and South Africa; for who can tell what may happen when the words of the poet are realized: 'One day Germanism will be the salvation of the world.'"—*Kreuszeitung des Ostheeres* (official publication issued by German Commander at Lodz on the occasion of German Emperor's birthday, January 27, 1915).

A MATTER OF GERMAN "HONOR" TO HOLD ON TO BELGIUM

"In our opinion, it is radically necessary to improve our whole Western front from Belfort to the coast. Part of the North French Channel coast we must acquire if possible.

"On Belgium we must keep firm hold. . . . On no point are the masses more united, for without the slightest possible doubt they consider it a matter of honor to hold on to Belgium.

"Our friends, Austria-Hungary and Turkey, will open to us the Balkans and Asia Minor, and thus we shall assure ourselves of the Persian Gulf against the pretensions of Russia and Great Britain.

"We need liberty of the seas, which

Photograph by Leet Brothers

PRESIDENT WILSON MARCHING AT THE HEAD OF THE PARADE HELD WHEN THE FIRST SELECTIVES IN THE WAR AGAINST GERMAN AUTOCRACY WERE CALLED TO THE COLORS

Up Pennsylvania Avenue the Commander-in-Chief of the Army and Navy of the United States of America led the first men to be called from civilian life to take up arms in behalf of their own land and of all free peoples against Prussianism

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was the real cause of war between England and Germany. To obtain it we must have Egypt."—From the Manifesto of German Professors, October, 1914.

"POSSESSION OF NORTHERN FRANCE IS VITAL"

"So far as regards France, the possession of the coastal districts bordering on Belgium as far as the neighborhood of the Somme must be regarded as a vital matter for our future position at sea. The 'hinterland,' which must be acquired with them, must be so delimited that the complete use of the canal ports which we gain, both for industrial and strategic purposes, must be secured. All further acquisitions of French territory, apart from the necessary annexation of the mining district of Briey, must be determined purely according to military and strategical considerations. After the experiences of this war, it must be regarded as a matter of course that we must not in the future leave our frontiers open to hostile invasion, as we should do if we left to our opponents those fortified positions which threaten us, and in particular Verdun and Belfort and the part of the western slopes of the Vosges which lies between them. With the acquisition of the line of the Meuse and the French coast to which the canals lead and the mining districts of Briey, which have been mentioned, the possession of the canal districts in the Department of the Nord and the Pas de Calais is necessarily included.

"The necessity of strengthening the agricultural basis of our nation requires a considerable extension of the Imperial and Prussian frontiers in the East by annexation of at least parts of the Baltic provinces and of those territories which lie to the south of it.

"The reconstruction of East Prussia requires the better security of its frontiers by placing in front of them considerable districts, and also West Prussia, Posen, and Silesia must not remain frontier marches exposed to danger as they are now.

"The security of the German Empire imperatively requires the possession of the whole adjoining territory of Luxemburg and Lorraine, including the fortifications of Longwy."—From the Manifesto of Six Industrial Associations, May, 1915.

CONQUEST OF INDIA AND CHINA WITH TURKEY'S AID

"With the help of Turkey, India and China may be conquered. Having conquered these, Germany should civilize and Germanize the world, and the German language would become the world language."—THEODOR SPRINGMAN, *Deutschland und der Orient*, 1915.

"In a hundred years the American people will be conquered by the victorious German spirit, so that it will present an enormous German Empire. Whoever does not believe this lacks confidence in the strength of the German spirit."—ROBERT THIEM, *Alldeutsche Blatter*, 1902.

"At the present moment the center of German intellectual activity is in Germany; in the remote future it will be in America. . . . Germans only need to grasp the situation and the future is theirs. Let them show that they mean to maintain Deutschtum, and then emigration may be directed to America with impunity."—HUBBE-SCHLEIDEN, in *Alldeutsche Blatter*, 1903.

"Not only North America, but the whole of America must become a bulwark of Germanic Kultur, perhaps the strongest fortress of the Germanic races. That is every one's hope who has freed himself from his own local European pride and who places the race feeling above his love for home. Also South America must and can easily become a habitation for German or Germanoid races!"—KLAUS WAGNER, *Krieg*, 1906.

James W. Gerard, former United States Ambassador to Germany, in his account of his experiences at the Imperial Court, declares: "An official (German) declared (in 1915) that they had tried to get England to interfere, together with them, in Mexico, and Germans 'Gott strafe' the Monroe Doctrine in their daily prayers of hate. Every night fifty million Germans cry themselves to sleep because all Mexico has not risen against us."

ACES AMONG ACES

By Laurence La Tourette Driggs

AIR duels were unknown four years ago. Boys of 18 or 20, untaught and inexperienced in the art, have flown aloft and mastered it—mastered it so thoroughly that less prudent antagonists have fallen before them, sometimes six in one day. At least a score of such duels have been reported where the victor won by the expenditure of a single bullet!

Lufbery for America, Guynemer for France, Bishop for Great Britain, and von Richthofen for Germany have towered above their comrades from the popular viewpoint because of their conspicuous successes in this new art of aëroplane dueling.

To promote this new and spectacular branch of warfare, the rival air forces of the belligerents have constructed the swiftest and deadliest types of aëroplanes, to be manned by their air duelists—expert sharpshooters and pilots—whose duty it is both to attack the heavy bombing and reconnaissance planes of the enemy and to defend their own slower aëroplanes from chasing aviators.

Each belligerent nation has collected the cream of its sharpshooters into one squadron, or escadrille, where as one unit they can be hurled into a threatened area with every prospect of success over less skilled antagonists.

THE PREMIER ESCADRILLE

France has her Cigognes ("Storks"), the celebrated Spad 3, to which belong Fonck, Heurteaux, Pinsard, Deullin, Gond, Herrison, the Americans Baylies and Parsons, and those who have made the sacrifice supreme—Guynemer, Auger, René Dorme, and de la Tour.

America has her Escadrille Lafayette, which was commanded by Major Lufbery and which stands third among all the fighting escadrilles of France in the number of enemy aëroplanes shot down.

The British have R. F. C. Squadron No. 1, which is commanded by Captain Fullard and which brought down 200 German aëroplanes in a short six months.

And the Germans entrusted their hopes to the famous Tango Circus, so nicknamed by the English pilots by reason of the close formation in which the gaudily painted aëroplanes of this enemy unit flew. The victories claimed by this band amount to more than double those accorded to any single squadron of the Allies. And the commander of this Jagdstaffel No. 11 holds the world record in air dueling, for he lived to conquer 80 enemy machines.

FONCK, OF THE CIGOGNES

The most polished aërial duelist the world has ever seen is René Fonck, aged 23, now flying with the Cigognes, Spad 3. This is the famous fighting escadrille that was commanded by Guynemer at the time of his disappearance, September 11, 1917. Curiously enough, Lieutenant Fonck, who was then a member of Escadrille N. (Nieuport) 103, was Guynemer's avenger. He shot down on September 21 the German pilot, Lieutenant Wissemann, who had written home to his mother in Cologne, boasting that he had been victorious over Guynemer and now need fear no one. As no proof of Guynemer's death has yet been found, the truth of Wissemann's claim is doubted.

Consider the details of Fonck's record. Up to April 3, 1918, he had shot down officially 32 enemy aircraft, engaged in upward of 200 combats, flown over 1,000 hours above the enemy's lines, yet *had never received a bullet hole in his aëroplane!* Now he has 45 enemy planes on his tablet and is the French ace of aces.

Most of his combats are against formations of five or more enemies. While delivering the *coup de grace* to one he must prevent a surprise from the others. How he succeeds in this could never be satisfactorily explained, yet that he does succeed is beyond question. Such incredible perfection in maneuvering and such rapid and infallible accuracy of aim have never been equalled by any other fighting pilot.

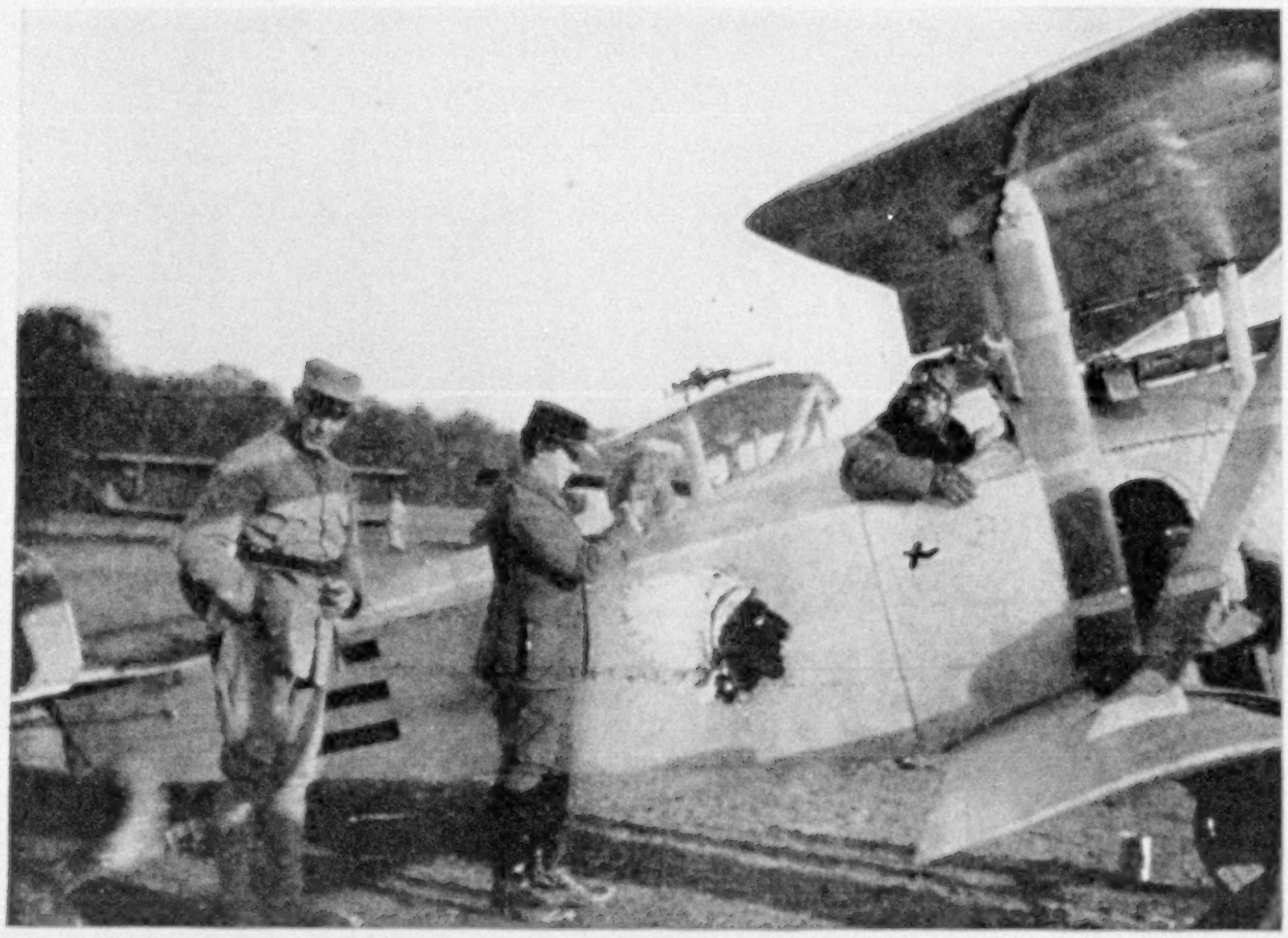
LIEUTENANT RENÉ FONCK ON THE MACHINE WITH WHICH HE DESTROYED SIX GERMAN PLANES IN ONE DAY

Lieutenant Fonck, of the Cigognes, the most famous of French escadrilles, is the world's most polished aërial duelist. He had shot down 32 enemy aviators, had flown more than 1,000 hours above the enemy lines, and had taken part in 200 combats before receiving a single bullet-hole in his own machine. It was Fonck who shot down Wissemann, the German aviator who is reputed to have killed Guynemer.

Lieutenant Dorme, of the same escadrille, who had 23 on his score at the time of his mysterious disappearance May 25, 1917, had shot down 10 of this number before he received more than two bullets in his own machine. He was nicknamed "the Unpuncturable" by his comrades for this superb skill and good luck. Guynemer returned daily with his plane, and even his clothing, riddled with bullet holes. One can but wonder at the miraculous record made by Fonck.

FONCK REVEALS HIS SECRET

But is it a miracle? Let Fonck himself tell the secret. In an interview with



Photograph by Press Illustrating Service

THE AMERICAN ACE, MAJOR RAOUL LUFBERY, AND HIS NIEUPORT

Note the gun on the engine hood, synchronized to fire through the propeller. On the machine at the rear a Lewis gun is shown mounted on the top plane. Major Lufbery was killed in an air fight on May 19, 1918. His record of official victories over the Huns was 18.

La Guerre Aerienne, of Paris, recently he made the following observations concerning his preparations for combat:

"One must be in constant training, always fit, always sure of oneself, always in perfect health. Muscles must be in good condition, nerves in perfect equilibrium, all the organs exercising naturally.

"Alcohol becomes an enemy—even wine. All abuses must be avoided. It is indispensable that one goes to a combat without fatigue, without any disquietude, either physical or moral.

"It must be remembered that combats often take place at altitudes of twenty to twenty-five thousand feet. High altitudes are trying on one's organisms. This indeed is, at bottom, the reason that keeps me from flying too continuously. And I never fly except when in perfect condition. I am careful to abstain when I am not exactly fit. Constantly I watch myself.

"It is necessary to train as severely for air combats as for any other athletic contest, so difficult is the prize of victory. Yet if one finds oneself in prime condition, all the rest is play."

And these precepts come not from a Sunday-school teacher, but from a youth who has demonstrated his theory with as thorough a test as can be imagined.

"All the rest" may be play, yet there is in that little play of Fonck's a secret of quickness and anticipation that is almost superhuman.

HOW HE DESTROYED SIX MACHINES IN ONE DAY

Lieutenant Fonck is the only Frenchman who has brought down six enemy aircraft in one day. He went up back of Soissons with his patrol on May 9 last and encountered three two-seater machines of the enemy. Two of these he destroyed in less than ten seconds and

Photograph from Paul Thompson

AMONG LIVING AVIATORS HE HOLDS THE WORLD'S RECORD FOR VICTORIES

Major William A. Bishop, V. C., D. S. O., M. C., premier ace of Great Britain's Royal Flying Corps, is a Canadian, 23 years of age. Seventy-two Hun planes have fallen before the skill of this master airman. Major Bishop came to America on furlough last winter and while in Washington, D. C., visited the headquarters of the National Geographic Society, where he wrote "Tales of the British Air Service," published in the January, 1918, number of the NATIONAL GEOGRAPHIC MAGAZINE.

the third fell five minutes later. That afternoon he ran onto a formidable formation of five of the new Pfalz fighting machines working in contact with five Albatros scouts—all single-seaters. He dived into them and sent down three, one after another, the remainder breaking up and escaping before he could catch them. These six machines were shot down with an expenditure of ten cartridges per machine!

THE STORY OF RAOUL LUFBERY

Raoul Lufbery, the boy who ran away from his home in Wallingford, Conn., when he was 17, who wandered half the world over, working at odd jobs until his curiosity was satisfied and his purse replenished, who enlisted as a regular soldier in 1907, and went to the Philippines for two years, where he won all the prizes of his regiment as the best marksman on the range, and who entered aviation in France, his mother's country, mainly to avenge the death of his friend and patron, Marc Pourpe—this same Major Raoul Lufbery met his death on Sunday morning, May 19 last, with a record of 18 German aëroplanes shot down, which is the highest score held by any American. Not a newspaper in our land but told of his loss. This runaway boy died leaving his name as well known to his countrymen as is that of Pershing or Sims.

Among the last heroic survivors of the old school of war-fliers, Lufbery was revered and is mourned most keenly by the group of our young airmen who were under his tutelage in the Escadrille Lafayette, the Spad 124. One of these,

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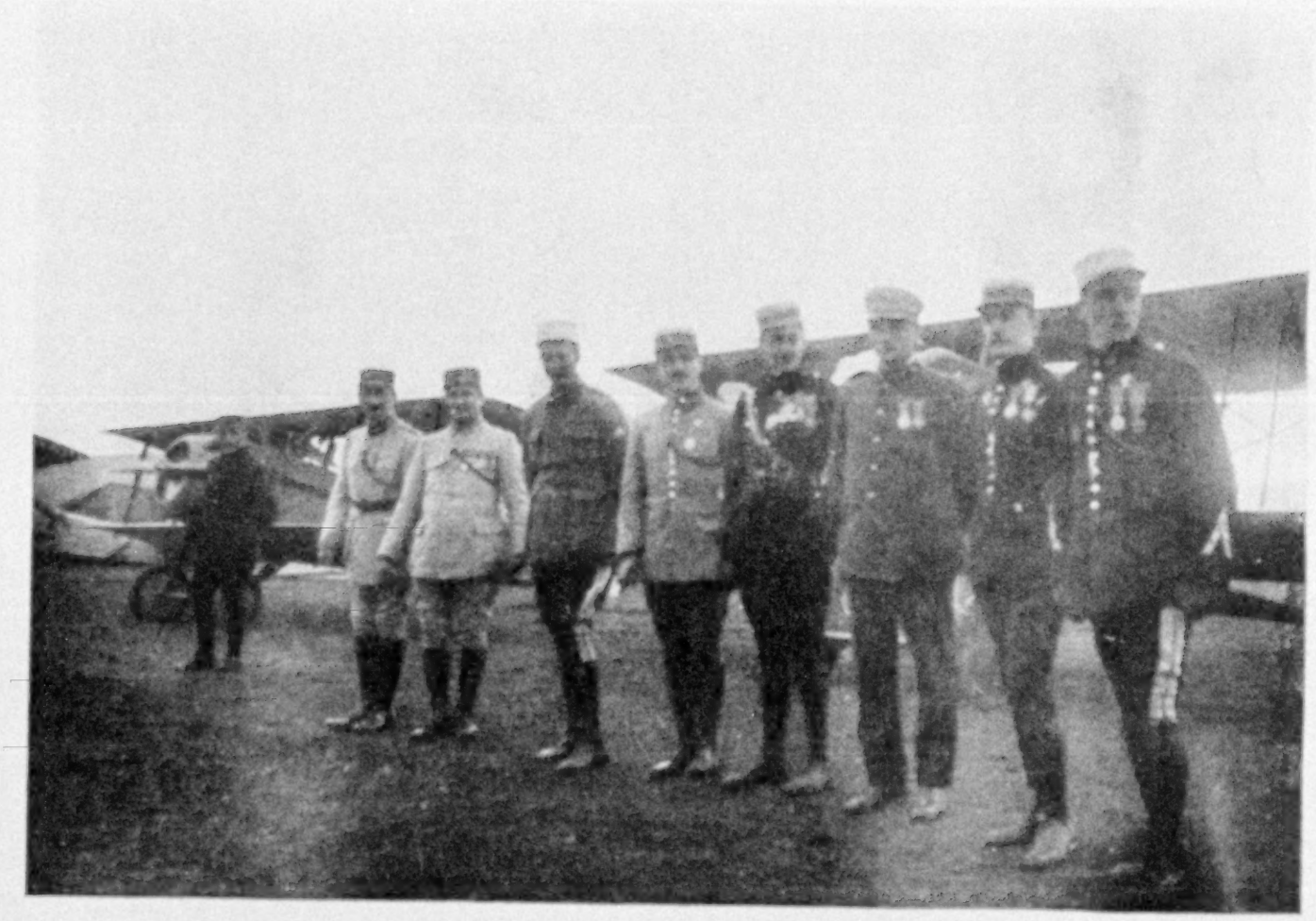


Courtesy of Capt. Jean Richard

ACES AMONG ACES: SOME OF THE MOST FAMOUS AIRMEN WHO HAVE FLOWN FOR FRANCE AND HUMANITY

From right to left: Capt. Albert Heurteaux, Capt. Alfred Auger, Commander Hogrel, Capt. Georges Guynemer, Lieut. Albert Deullin, Lieutenant Andre, Lieut. René Dorme, and Lieutenant Raymond.

David E. Putnam, has already surpassed his chief in one day's chase, having brought down five enemy machines on June 10, according to a dispatch from France.

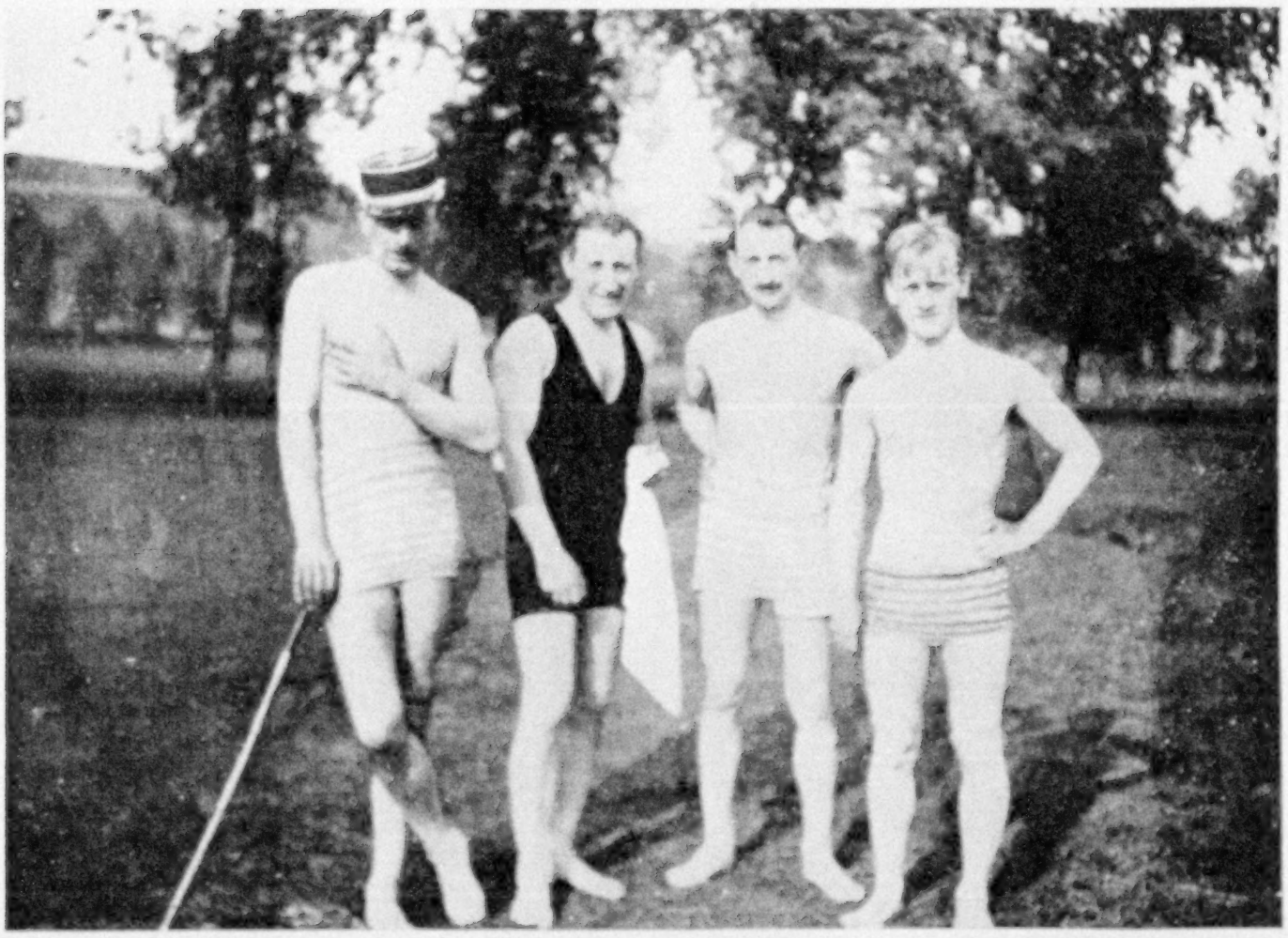
This places Sergeant Putnam in the proud position of America's ace of aces, with a total score of 13 aëroplanes shot down. Forty-two other young American pilots have won one or more victories over their opponents. Ten of them have won their fifth and with it the title of ace.

THE HIGH-SCORE ACE OF THE ROYAL FLYING CORPS

"The King has been graciously pleased to approve the award of the Victoria Cross to Second Lieutenant (temporary Captain) James Byford McCudden, who already possesses the Distinguished Service Order, the Military Cross, the Military Medal, the General List, and Roval Flying Corps, for most conspicuous bravery, exceptional perseverence, keenness, and very high devotion to duty."

So reads a communique of recent date from the British War Office. Captain McCudden has brought down 54 enemy aëroplanes, which gives him the highest score among the British pilots, Philip F. Fullard coming next, with 48, and William A. Bishop, the Canadian, who visited the United States during last winter, standing third, with 47 victories.

(Since the above was written an unofficial report states that Major Bishop has added 25 more victories to his score of 47, making a total of 72; stating further that he has retired from air fighting to instruct his freshmen pilots in the art of air dueling. Bishop has now but one competitor for the world's record in the number of aircraft destroyed—Captain von Richthofen.)



FRENCH HEROES WHO ARE AT HOME IN THREE ELEMENTS—EARTH, AIR, AND WATER

After a plunge in the Somme, three French airmen and their squad physician brave the camera. The tall officer, with the cap and cane, is Lieutenant Benois, now in America attached to the French military mission. The officer on the extreme right is Capt. Jean Richard, formerly of the Storks Escadrille, but now detailed to artillery and stationed in Washington temporarily. Lieutenant Raymond stands next to the physician, who wears the black bathing suit.

Capt. Albert Ball, the conqueror of Germany's star air fighter, Immelmann, was himself killed in combat with Lieut. von Richthofen a year ago, after having amassed 43 official successes, at that time the world's record.

Not only does the British champion, McCudden, surpass all his countrymen at the front since Bishop's retirement, but he leads the highest score in France, that of Georges Guynemer, who went out for the last time on September 11, 1917, having at that time accounted for 53 German aëroplanes.

WHAT CONSTITUTES CONSPICUOUS BRAVERY

Let us see what constitutes "conspicuous bravery," in the opinion of the unemotional custodians of the Victoria Crosses in England.

On two occasions McCudden has totally destroyed four two-seater machines on the same day; on the last occasion all four of such two-seaters were destroyed within one hour and 30 minutes—costing Germany some $250,000, as the value of aëroplanes and trained pilots is computed, for this hour and a half of young McCudden's time.

On December 23, 1917, when leading his patrol, he attacked eight hostile aëroplanes. Two of them he shot down, the others he drove deep into their own lines, returning home himself only when his Lewis gun ammunition was exhausted and the belt of his Vickers gun had broken.

The citation says: "As a patrol leader he has at all times shown the utmost gallantry and skill not only in the manner in which he has attacked and destroyed the enemy, but in the way he has during

several fights *protected the newer members of his flight,* thus keeping their casualties down to a minimum. (The italics are my own.) This officer is considered by the record which he has made, by his fearlessness, and by the great services which he has rendered to his country, deserving of the very highest honor."

It requires bravery truly to bring down 54 armed aëroplanes. But that bravery becomes conspicuous and deserving of the very highest honor when it includes shielding from danger the little fellows who are devotedly following their daring leader.

THE CAREER OF CAPTAIN VON RICHTHOFEN

Manfred von Richthofen, favorite of the Kaiser, a brilliant fighter, a chivalrous gentleman, and the pride of the German army, was the celebrated commander of the enemy air squadron officially known as Judgstaffel No. 11, but familiar to all airmen as the Tango Circus. Of aristocratic birth, he was a lieutenant of Uhlans before the outbreak of the war. The former air champion, Captain Boelke, induced him to enter the Air Service in 1915, and his first victory was won in September, 1916. In seven months the flying squadron which he led shot down 200 aëroplane antagonists.

In less than fifteen months active flying, von Richthofen personally brought down 70 aëroplanes and 10 observation balloons, mostly British. He flew the swiftest type of aëroplanes that German constructors could build, and he mounted upon them two Spandau machine-guns that fired straight ahead between the blades of the propeller. His machine he painted a bright red, and for the past eight months his menacing presence thus courted identification from his enemies with a self-confidence and audacity truly admirable.

He was shot down April 21, 1918, over the Somme River, at the Amiens front, and his new Fokker triplane, a personal gift to him from Fokker himself, fell into the British lines. This machine flew 140 miles per hour and climbed 15,000 feet in 17 minutes. Orders found in his pockets indicated that the enemy army commanders desired this sector cleared of British aëroplanes on the morning of April 21 at all costs. But it is doubtful whether the fall of Amiens itself would have compensated Germany for the cost she paid in the loss of this great ace.

GENEROUS TRIBUTE TO THE ENEMY ACE

The following generous tribute to an enemy airman is written by C. G. Grey, of London:

"The greatest of our enemies in the air, Rittmeister Freiherr Manfred von Richthofen, is dead. The Royal Flying Corps, his particular foes, will hear the news with mixed feelings. They will rejoice that he is out of action, but will regret sincerely the death of a gallant gentleman who fell bravely doing his duty.

"Only a few days ago one of the best of our airmen expressed the hope that he and von Richthofen might survive the war, so that they might compare notes. Some few months ago a dinner was given to another of our renowned fighting pilots by his squadron, in honor of his winning the Distinguished Service Order. In returning thanks, the hero of the evening, as gallant a lad as ever flew, stood up and proposed the health of von Richthofen. And the fighting pilots of the squadron arose and duly honored an enemy whom they respected. Both the proposer of the toast and his enemy are now dead. One hopes that beyond the shadows they have met, as gallant enemies do when they have fought a good fight and peace has come to them.

"These two incidents indicate, one believes, the feelings of the Royal Flying Corps toward Rittmeister von Richthofen. There is not one in the corps who would not gladly have killed him. But there is not one who would not equally gladly have shaken hands with him had he been brought down without being killed or who would not so have shaken hands if brought down by him.

"His death is bound to have a depressing effect upon the German Flying Service, for obviously the younger and less brave pilots will argue that if a von Richthofen cannot survive their chances must be small. Equally, his death is an encouragement to the younger Allied pilots who can no longer imagine that every skillful German who attacks them is von Richthofen himself.

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"However, Manfred von Richthofen is dead. He was a brave man and a clean fighter. May he rest in peace."

Who can now say the day of chivalry is past? Our great enemy ace was buried with full military honors, in French soil, on April 22, and his personal effects were sent home to his family.

A MEAN AND BITTER EPILOGUE

It would be pleasanter to leave the story of von Richthofen's gallant death and funeral thus; but an interesting, though contemptible, epilogue is thrust upon our attention from the land of the fallen hero. It is penned by the notorious Count Reventlow, and appears in the May 1 issue of the *Deutsche Tagezeitung* to poison the mind of the Boche and inflame it into greater hatred against the foe. It says:

"These honors are nothing but the manifestation of British self-advertisement of their 'chivalry.' We once heard much of the chivalrous treatment accorded by the English to Captain von Muller, of the *Emden*, but as soon as he was able to speak we found that instead of chivalrous treatment he had received nothing but deliberate vileness, contempt, and torture from his captors.

"For our part we cannot consider the honors given to the remains of von Richthofen as sincere. The English press is full of them, and with characteristic blatancy blares about British magnanimity. But they say nothing about the huge prizes in money that were offered to the pilot who could kill Richthofen. In fact, these must have amounted to an enormous sum. And this explains the bitter and 'noble' controversy which raged around the corpse of the fallen pilot, for there was cash waiting for the one who inflicted the fatal wound and brought the German machine to earth. The officials themselves who buried our hero were all fortunate money-makers. Thus this spectacle takes on a thoroughly disgusting aspect."

To which Marc Antony might well have said: "Oh Judgment! Thou hast fled to brutish beasts, and men have lost their reason!"

In truth, the official reports have indicated that it is in doubt as to whether von Richthofen fell from a shot from the air or from the ground. Many aëroplanes were engaged in a "dog fight" at very low levels at the time and machine-guns from the British lines took part in the fray. Suddenly Richthofen's gaudily painted triplane darted into the ground and smashed. Investigation disclosed a bullet through his heart, but from whence it came could not be ascertained.

Subsequently the *Toronto Globe* announced that von Richthofen's conqueror was Capt. Roy Brown, of Carleton Place, Ontario, who was one of the fighting pilots participating in the combat.

THE ROLL OF ACES OF ALL BELLIGERENTS

Having described their methods and peculiarities and studied their characteristics, which account for their proved superiority both over their enemies and in comparison with their comrades, let us look at the complete score of the aces of aviation of all the belligerent countries.

This score I have been tabulating since the war in the air began, and it is officially correct up to the date of June 15, 1918, with the exception of the list of British aces, whose records are not made public until His Majesty is graciously pleased to confer upon them the Victoria Cross or the Distinguished Service Order for some extraordinary and brilliant performance of duty. Many British aces must, therefore, be omitted from the following table.

THE SCORE OF THE LIVING ACES OF FRANCE

Fifty-five French aces, living, have brought down 547 enemy aëroplanes, as follows:

Lieut. René Fonck	45
Lieut. Charles Nungesser	36
Lieut. George Madon	34
Capt. Albert Heurteaux	21
Adjt. Guerin	21
Lieut. Deullin	19
Capt. Armand Pinsard	18
Lieut. Maurice Boyau	18
Lieut. de Meuldre	13
Lieut. Marcel Hughes	12
Adjt. Jailler	12
Lieut. Sardier	11
Lieut. Tarascon	11
Lieut. Ortoli	11
Adjt. Andre Herbelin	10
Lieut. Garaud	10
Lieut. de Turrenne	10
Adjt. Chainat	9
Adjt. Casale	9
Adjt. Dauchy	9
Lieut. Viallet	8
Capt. Derode	7
Lieut. de Sevin	7

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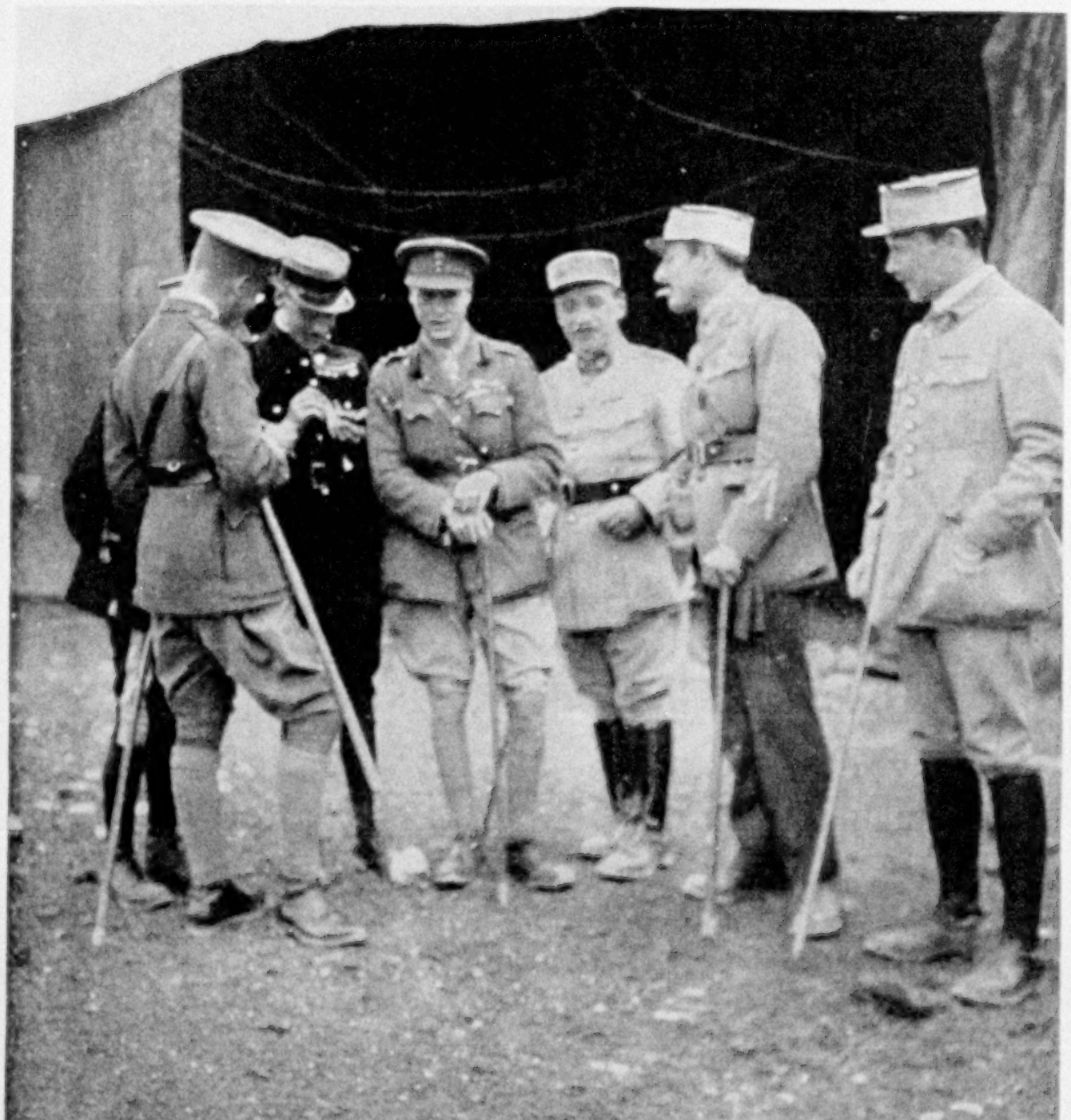
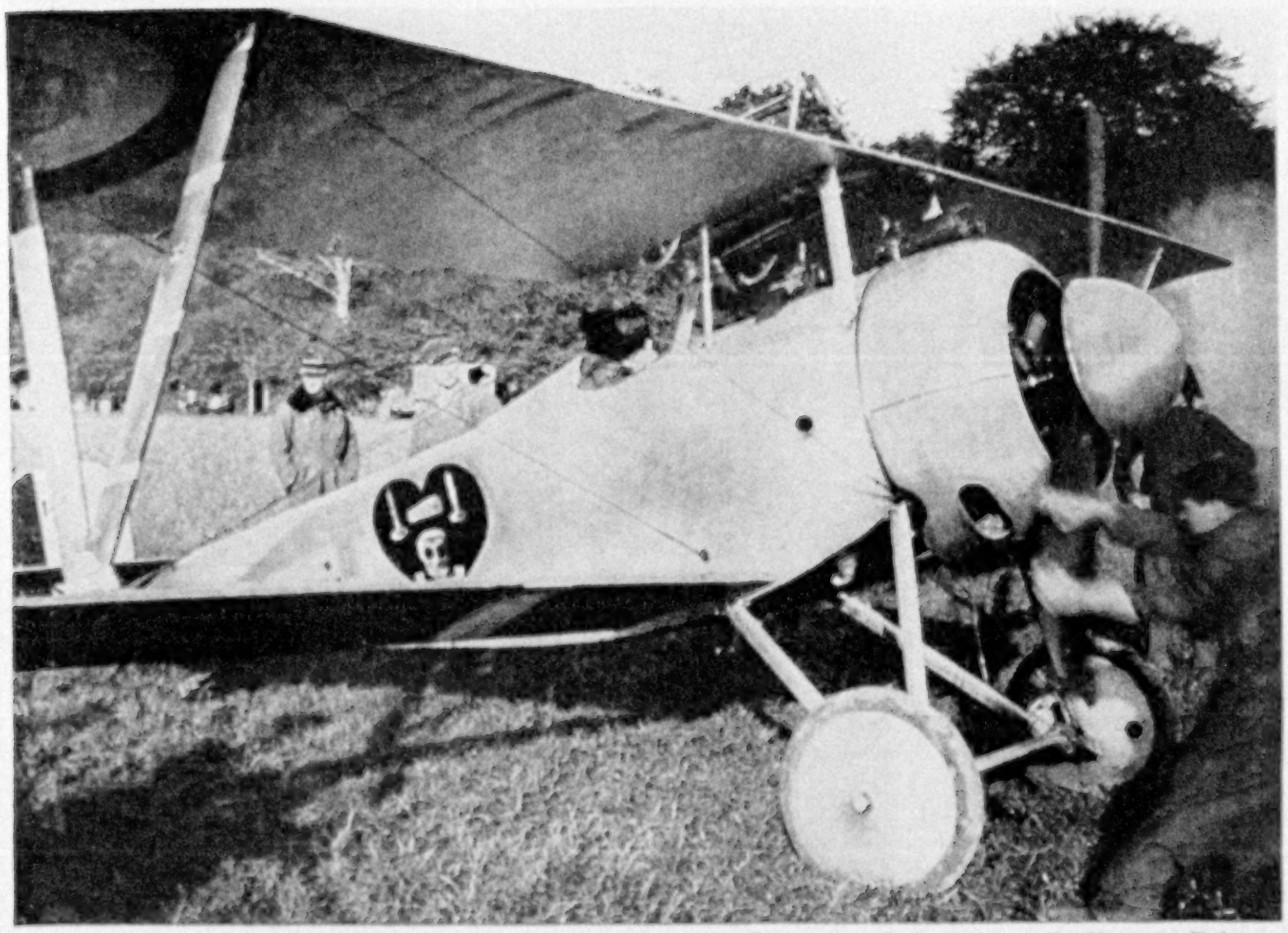


Courtesy of Capt. Jean Richard

LEFT TO RIGHT: CAPT. LORD HAMILTON, CAPT. HEURTEAUX, CAPT. GUYNEMER, H. R. H. THE PRINCE OF WALES (WHO IS AN HONORARY MEMBER OF THE STORKS ESCADRILLE), LIEUTENANT CASSAR (STAFF OF PRINCE OF WALES), CAPT. DE LA TOUR, AND CAPTAIN D'HARCOURT

Lieut. de Slade	7	Soldat Louis Martin	6
Adjt. Leon Vitalis	7	Lieut. Leps	6
Lieut. Lachmann	7	Lieut. Raymond	6
Lieut. Flachaire	7	Lieut. Alex Borzecky	5
Adjt. Victor Sayaret	7	Adjt. Bloch	5
Lieut. Jean L'hoste	7	Lieut. Paul Gastin	5
Sergt. René Montrion	7	Lieut. Regnier	5
Sergt. du Bois d'Aische	6	Comdr. de Maraucourt	5
Lieut. Covin	6	Adjt. Herrison	5
Lieut. Bonnefoy	6	Lieut. Marty	5
Sergt. Soulier	6	Adjt. Blanc	5
Lieut. Gond	6	Sergt. Ouette (missing May 16, 1918)	5
Sergt. Boyau	6	Sergt. Bouyer	5
Adjt. Dhôme	6	Adjt. Casenove de Pradines	5
Adjt. Peronneau	6	Sergt. Pierre Marinovitch	5
Sergt. Rosseau	6	Lieut. Nogues	5



Photograph from Laurence La Tourette Driggs

LIEUTENANT CHARLES NUNGESSER; SCORE, 36 HUNS

Nungesser is second only to Lieutenant Fonck among living French fliers in the number of his victories. His fighting plane mounts one gun on the engine hood and one on the upper plane.

RECORD OF FRANCE'S HERO DEAD

Nineteen French aces, dead or retired, have brought down 208 enemy aëroplanes.

(The date of the termination of the ace's activities is indicated in parentheses.)

Capt. Georges Guynemer (September 11, 1917)	53
Lieut. René Dorme (May 15, 1917)	23
Lieut. Jean Chaput (May 18, 1918)	16
Lieut. Navarre (retired April 10, 1917)	12
Lieut. de la Tour (December 21, 1917)	11
Adjt. Maxime Lenoire (October 25, 1916)	11
Capt. Georges Matton (September 10, 1916)	9
Sergt. Sauvage	8
Capt. René Doumer (April 26, 1917)	7
Lieut. de Rochefort	7
Capt. Alfred Auger (July 28, 1917)	7
Lieut. Henri Languedoc	7
Lieut. de Mortemart (March 20, 1918)	6
Lieut. Adolph Pegoud (August 31, 1915)	6
Lieut. Andre Delorme	5
Sergt. Marcel Hauss	5
Capt. Lecour-Grandmaison (May 10, 1917)	5
Lieut. George Baillot (May 20, 1916)	5
Adjt. Pierre Violet (December 27, 1916)	5

The total of 74 French aces, living and dead, is 755 enemy aëroplanes shot down to June 15, 1918.

WHAT UNITED STATES ACES HAVE DONE

Maj. Raoul Lufbery (killed May 19, 1918)	18
Sergt. David E. Putnam, Brookline, Mass.	13
Lieut. Frank L. Baylies, New Bedford, Mass. (missing June 20, 1918)	12
Maj. William Thaw, Pittsburgh, Pa.	5
Lieut. Robert Magoun, Boston, Mass. (wounded April 8, 1918)	5
Lieut. Douglass Campbell, Pasadena, Cal.	5
Adjt. Edwin C. Parsons, Springfield, Mass.	5
Lieut. H. Clay Ferguson (wounded March 12, 1918)	5
Lieut. Paul Frank Baer, Mobile, Ala. (missing May 22, 1918)	5
Corp. David McK. Peterson, Honesdale, Pa. (last victory unofficial)	5
Lieut. Edward Richenbacker, New York	5

Eleven American aces have a total of 83 enemy planes brought down. Several of the British aces are Americans who enlisted in the Royal Flying Corps.

THE BRITISH LIST

Major William A. Bishop	72
Capt. James McCudden	54
Capt. Philip F. Fullard	48
Capt. Henry W. Wollett (13 in one day)	28
Lieut. John J. Malone	20
Lieut. Allan Wilkenson	19
Lieut. Stanley Roseveat	18
Lieut. Robert A. Little	17

XUM

Lieut. Clive Warman	15
Lieut. Fred Libby	14
Capt. W. C. Campbell	14
Lieut. R. T. C. Hoidge	14
Capt. Murray Galbraith	13
Lieut. Joseph Stewart Fall	13
Lieut. A. K. Cowper	12
Capt. Whitaker	12
Capt. Robert Dodds	11
Lieut. M. D. G. Scott	11
Lieut. Raymond Collinshaw	10
Lieut. R. A. Mayberry	9
Lieut. John Andrews	9
Capt. Gilbert Ware Green	9
Lieut. K. R. Park	9
Lieut. M. B. Frew	8
Sergt. Dean I. Lamb	8
Lieut. Boyd Samuel Breadner	8
Lieut. Andrew McKeever	8
Lieut. J. H. T. Letts	8
Lieut. Lionel B. Jones	7
Lieut. A. S. Shepherd	7
Lieut. James Dennis Payne	7
Lieut. G. E. H. McElroy	7
Capt. C. A. Brewster-Joske	7
Capt. Wagour	7
Capt. Frank G. Quigley (all in one day)	6
Capt. G. E. Thomson	6
Capt. Lancelot L. Richardson	6
Lieut. Cecil Roy Richards	6
Lieut. Howard Saint	6
Lieut. Fred John Gibbs	6
Lieut. C. W. Cuddemore	6
Lieut. William Lewis Wells	5
Lieut. E. D. Clarke	5
Capt. Fred Hope Lawrence	5
Lieut. Edward R. Grange	5
Lieut. W. G. Miggitt	5
Lieut. Lawrence W. Allen	5
Lieut. William D. Matheson	5
Lieut. Stanley J. Coble	5
Capt. G. H. Boarman	5
Lieut. F. T. S. Menendez	5
Capt. K. C. Patrick	5
Sergt. T. F. Stephenson	5
Comdr. F. C. Armstrong	Many
Comdr. R. F. Minifie	"
Comdr. E. L. N. Clarke	"
Comdr. R. B. Munday	"
Comdr. G. W. Price	"
Comdr. R. J. O. Compston	"
Lieut. V. R. Stokes	"
Lieut. W. C. Canbray	"
Lieut. H. T. Beamish	"
Lieut. E. T. Hayne	"
Lieut. G. W. Hemming	"
Lieut. J. E. L. Hunter	"
Lieut. W. A. Curtiss	"
Capt. H. T. Mellings (wounded May 18, 1918)	"
Lieut. Gerard B. Crole	"
Lieut. Robert N. Hall	"
Lieut. David Sidney Hall	"
Lieut. M. J. G. Day	"
Lieut. E. G. Johnston	"
Lieut. W. L. Jordan	"
Lieut. M. H. Findley	"
Lieut. C. B. Ridley	"

BRITISH DEAD OR RETIRED

Capt. Albert Ball	43
Capt. Brunwin Hales	27
Capt. Francis McCubbon	23
Capt. George Thomson	21
Capt. J. L. Trollope (six in one day)	18
Lieut. Leonard M. Barlow	17
Lieut. Clive F. Collett	15
Capt. H. G. Reeves	13
Capt. Noel W. W. Webb	12
Lieut. Rhys-David	9
Capt. Henry G. Luchford	7

Estimating "many" as at least five, the known list of the British aces accounts for at least 950 enemy aëroplanes with the above named 86 members. Undoubtedly the complete list will disclose another score of British aces.

RECORD OF ITALIAN ACES

Maj. Baracca (killed June 21, 1918)	36
Lieut. Barachini	31
Lieut. Ancilotti	19
Col. Piccio	17
Capt. Duke Calabria	16
Lieut. Scaroni	13
Lieut. Olivari (killed)	12
Lieut. Hanza	11
Sergt. Maisero	8
Lieut. Parnis	7
Sergt. Poli	6
Lieut. Luigi Olivi	6
Lieut. Stophanni	6
Lieut. Arrigoni	5

Fourteen Italian aces have totalled 193 victories.

EIGHT BELGIAN ACES, 60 VICTORIES

Adjt. Coppens	13
Lieut. Thieffry (killed February 23, 1918)	10
Lieut. de Meulemeester	10
Lieut. Jan Olieslagers	6
Adjt. Beulemest	6
Capt. Jaquette	5
Lieut. Robin	5
Adjt. Medaets	5

RUSSIAN ACES

Capt. Kosakoff	17
Capt. Kroutenn (killed June 22, 1917)	6
Lieut. Pachtchenko	5

LIVING HUN ACES TOTAL 747 PLANES

Thirty-six German and four Austrian aces, living, total 747 aëroplanes.

Lieut. Max Buckler	33
Capt. Berthold	33
Lieut. Menckhof	33
Lieut. Loerzer (wounded June 15, 1918)	33
Lieut. Schleich	30
Capt. Brunowsky, Austria	29
Lieut. von Bulow	28
Lieut. Kroll	28
Lieut. Wuesthoff	27
Lieut. Udet	27
Lieut. Lowenhardt	27
Lieut. Arigi, Austria	26
Lieut. Peutter	25
Lieut. Link Crawford, Austria	23
Capt. Baumer	23
Lieut. Kirstein	23
Corp. Rumey	23
Lieut. Klein	22
Lieut. Windisch	21
Lieut. Adam	21
Lieut. Veltgens	21
Lieut. Thuy	20
Lieut. Reinhardt	20
Lieut. Kissenberth	17
Lieut. Schmidt	15
Lieut. Hess	13
Lieut. Muller	13
Lieut. Goettsch	13
Lieut. Goering	10
Lieut. Banfield, Austria	9
Sergt. Frickart	9
Lieut. von Althaus	8
Lieut. Esswein	6
Lieut. Walz	6
Lieut. Hehn	6
Lieut. Koenig	6
Capt. Zauder	5
Lieut. Brauneck	5
Lieut. Ullmer	5
Lieut. Roth	5

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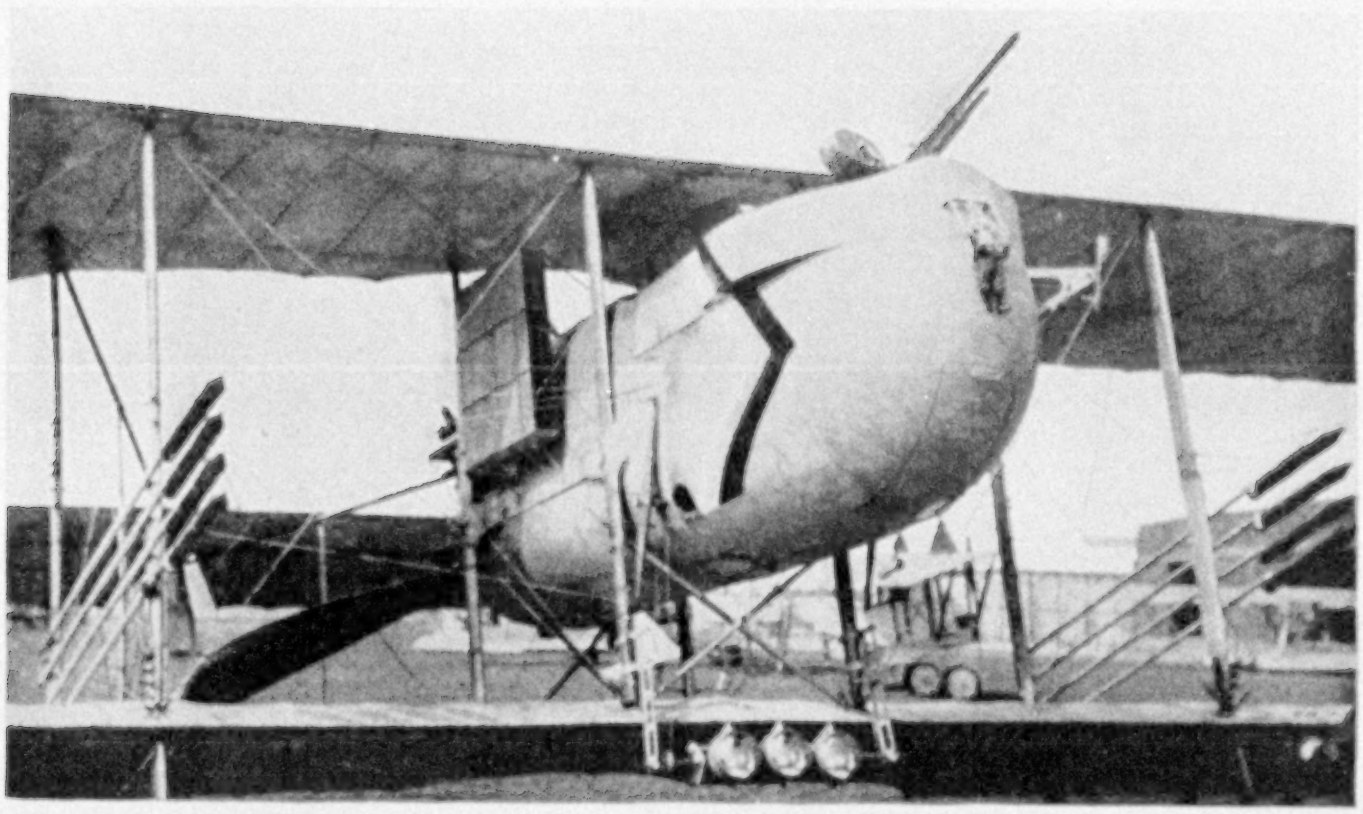


Photograph by International Film Service

A TYPE OF NIGHT-FLYING AIRPLANE NOW IN USE

Note the four rockets on each side and the machine-gun protruding over the bow of the boat-shaped fuselage. The radiators for the motor are on each side of the fuselage. Below the lower plane of the machine is a battery of three searchlights controlled, of course, by wired levers within reach of the pilot. A touch of humor is supplied in the manikin figurehead at the bow.

Forty-eight German aces, dead or retired, have brought down 923 aëroplanes.

(Date when activities ceased is indicated in parentheses.)

Capt. von Richthofen (killed April 21, 1918)	80
Lieut. Werner-Voss-Crefeld (killed Oct. 8, 1917)	49
Capt. Boelke	40
Lieut. Gontermann (November 3, 1917)	39
Lieut. Max Muller (January 15, 1918)	38
Lieut. Bongartz (wounded March 3, 1918)	36
Lieut. Cort Wolf	33
Lieut. Schaeffer	30
Lieut. Almenroeder	30
Lieut. von Richthofen, wounded	29
Capt. von Tutscheck (March 17, 1918)	27
Lieut. Barnet (October 13, 1917)	27
Lieut. Dosler (January 1, 1918)	26
Lieut. Erwin Boehm (December 1, 1917)	24
Lieut. von Tschwibon (November 22, 1917)	20
Lieut. von Eschwege	20
Lieut. Bethge (March 17, 1918)	20
Capt. Behr	19
Lieut. Thulzer	19
Lieut. Baldamus	18
Lieut. Wintgens	18
Lieut. Frankel	17
Lieut. Geigel (May 13, 1918)	15
Lieut. Schneider	15
Lieut. Immelmann	15
Lieut. Nathanall	14
Lieut. Dassenbach	14
Lieut Festner	12
Lieut. Pfeiffer	12
Lieut. Manschatt	12
Lieut. Hohndorf (October 13, 1917)	12
Lieut. Mutschaat	12
Lieut. Buddecke	12
Lieut. von Kendall	11
Lieut. Kirmaier	11
Lieut. Theiller	11
Lieut. Herman Serfert	11
Lieut. Mulzer	10
Lieut. Leffers	9
Lieut. Schulte	9
Lieut. Parschau	8
Lieut. Schilling	8
Lieut. Immelmann	6
Lieut. Fahlbusch	5
Lieut. von Siedlitz	5
Lieut. Rosenkranz	5
Lieut. Habor	5
Lieut. Reimann	5

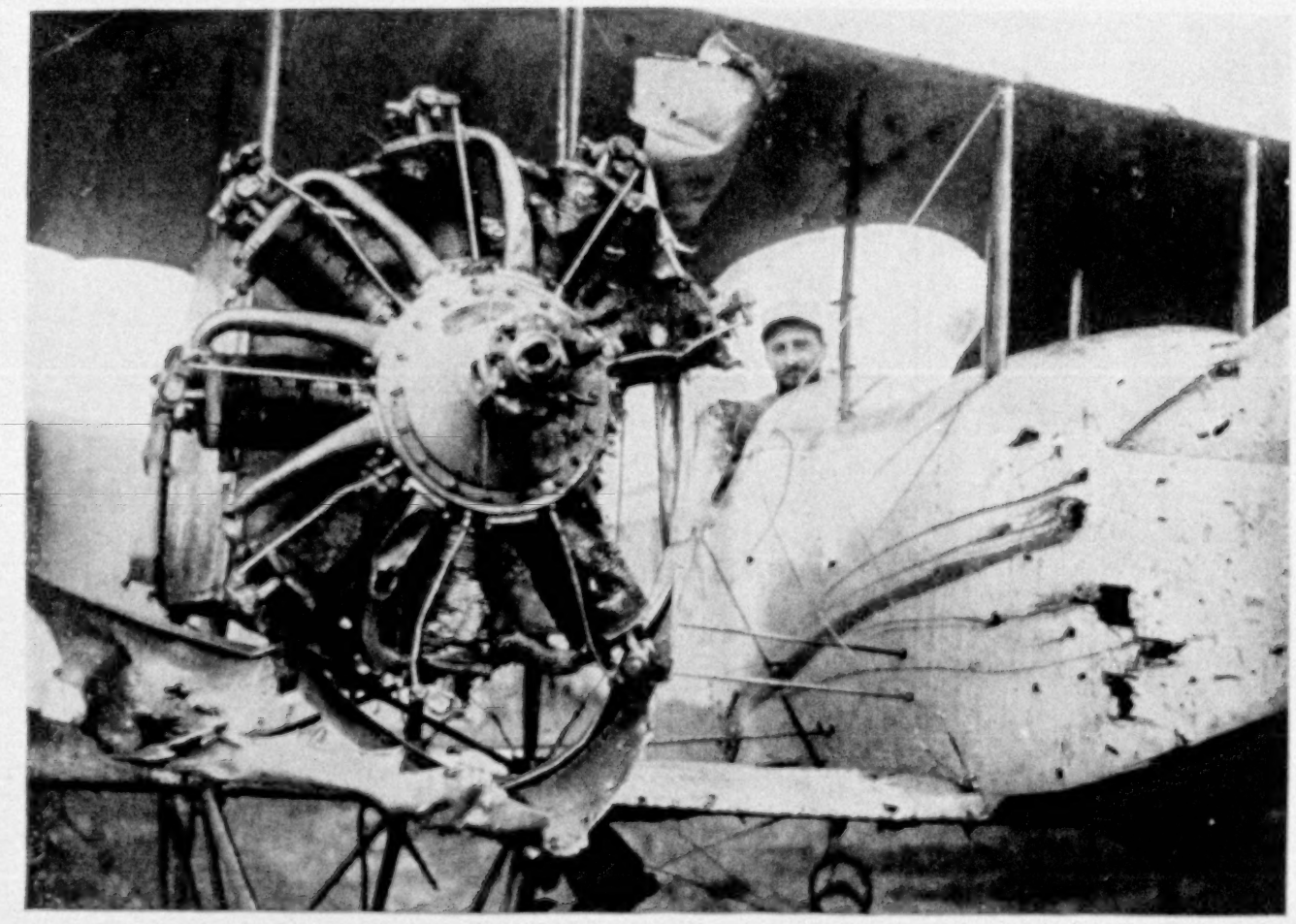
Thus, 88 German aces have shot down 1,670 aëroplanes of the Allies. On July 26, 1917, Germany claimed a total of 2,387 enemy aircraft destroyed since the beginning of the war. Since that time more than 1,000 have been added to this list.

TURKISH ACE

Capt. Schetz	8 successes

ALLIES' LIVING ACES, 157; HUNS, 40

Summarizing the foregoing table of the aces and their victories, we find that 88 Germans have brought down 1,670 hostile aircraft since the beginning of the war, while 193 Allied aces have considerably exceeded this score, with 2,041 enemy aircraft shot down. The startling feature in this comparison is the dis-



Photograph from Laurence La Tourette Driggs

AËROPLANE STRUCK IN MID-AIR BY A SHELL WHICH CARRIED AWAY ONE CYLINDER OF THE ROTARY MOTOR WITHOUT DESTROYING THE MACHINE

closure that German tactics in the air have permitted our enemy to destroy four-fifths as many aëroplanes with one-half the number of aces.

Cowardly as those tactics are, unsportsmanlike as the enemy pilots must admit themselves to be, the German method of air fighting has proved its superiority over the more daring and generous tactics of the Allies, both in economy in the use of man power and machines and in efficiency.

But another conclusion can also be drawn from these figures. Our enemy has but 40 pilots of the ace class remaining, while the Allies have 157. The dead or retired in the enemy list number 48, with 923 victories, as against the 40 still fighting, with 747 victories.

So, not only have our aërial duelists put *hors de combat* the majority of the enemy's star fighters, but in accomplishing this feat we have increased rather than lessened our own supply of expert duelists.

Add to this indication of ultimate supremacy the fact that the allied nations are now producing three or four times as many aëroplanes as Germany, and that the flying schools of the United States are crowded with eager lads impatiently waiting for their fighting mounts, and we begin to feel that the dueling days of Germany's 40 aces will soon be over.

THE TASK OF THE ALLIED ACES

And this 40 must be swept from the skies before our machines of reconnaissance and photographing can operate to perfection. Until the fighting planes of the enemy are suppressed our bombing machines are constantly menaced in their raids over enemy lines. One week's freedom from this menace would permit our bombing squadrons so to destroy the enemy's railroads and highways that the German forces at the front would be wholly deprived of food, ammunition, supplies, and reinforcements. Either retirement or surrender must ensue.

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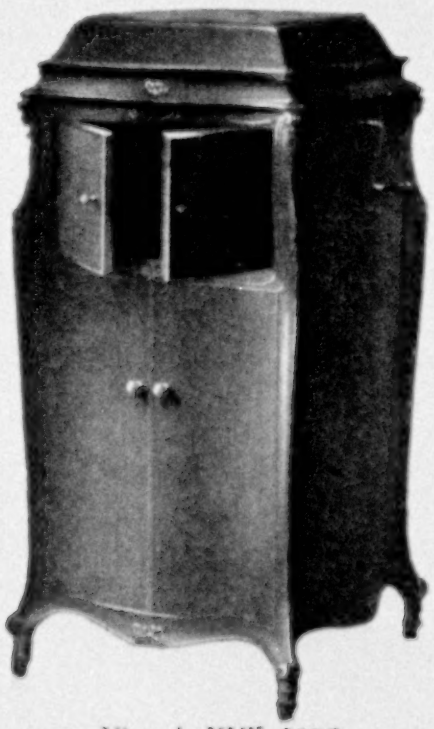

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THE MOOSE IS A POWERFUL SWIMMER

Wild Animals of North America

Intimate Studies of the Big and Little Citizens of the Mammal Kingdom

THERE is no subject richer in fascinating interest than the study of animal life. To see all the types and representative species in their native environment, to watch them meeting their respective problems of life and adapting themselves to the conditions they have to face, and to follow nature through its many moods as typified by its wonderful variety of mammalian forms is a delightful and informative diversion.

To do this under the guidance of one of those born observers, whose eyes are always open, whose ears are always keen, whose brain is always quick to grasp, and whose pen is ever facile, is to become intimately acquainted with one of the richest chapters in zoology.

Such is to be the good fortune of those who receive a copy of the National Geographic Society's new Book of Mammals. This work is the consolidation of Edward W. Nelson's splendid nature articles in the GEOGRAPHIC.

There is no man so well fitted to introduce you to the mammals of North America as Mr. Nelson, the Chief of our remarkable U. S. Biological Survey. For forty years he has been their friend, living among them and studying their habits and traits in the most intimate way. To him an animal is something more than flesh and bone and skin and fur. It has a personality; and he is as careful to record this as to describe the formal qualities which science writes down in species descriptions.

Mr. Nelson is a naturalist of the John Burroughs order. To visit the people of woodland, mountain, and field with him is to discover a new world.

Illuminating the descriptions are natural-color illustrations from the brush of that gifted artist-naturalist, Louis Agassiz Fuertes. Mr. Fuertes is not only a master of color but also of pose, and he can catch the timid alertness of the prong-horn antelope, the cruel sagacity of the aretic wolf, the lazy indifference of the common skunk, or the wide-awake watchfulness of the gray squirrel, with equal facility.

Added to these is a series of 50 drawings by Ernest Thompson Seton, depicting the footprints of various animals as they appear in the light snow of field or forest or in the dust of the wayside. These will enable the reader to identify the tracks of many of the mammals of North America.

Together these authorities have produced a book that is without counterpart in the literature of animal life.

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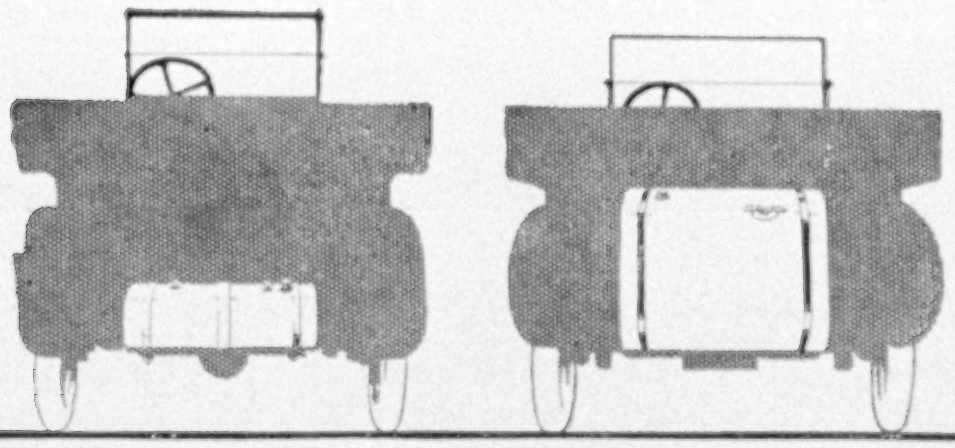

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Exactly; and your answer leads directly to the reason why the Franklin is the most economical fine car in America.

The Story Told by the Gasoline Tanks

The Franklin Car (the one on the left in the above picture), because it is scientifically free from unnecessary weight, runs 270 miles on its gasoline tank capacity of 13½ gallons. This is at the rate of 20 miles to the gallon.

The average heavy car (on the right), to run the same distance, would require a cumbersome gasoline tank holding 27 gallons—at the rate of only 10 miles to the gallon.

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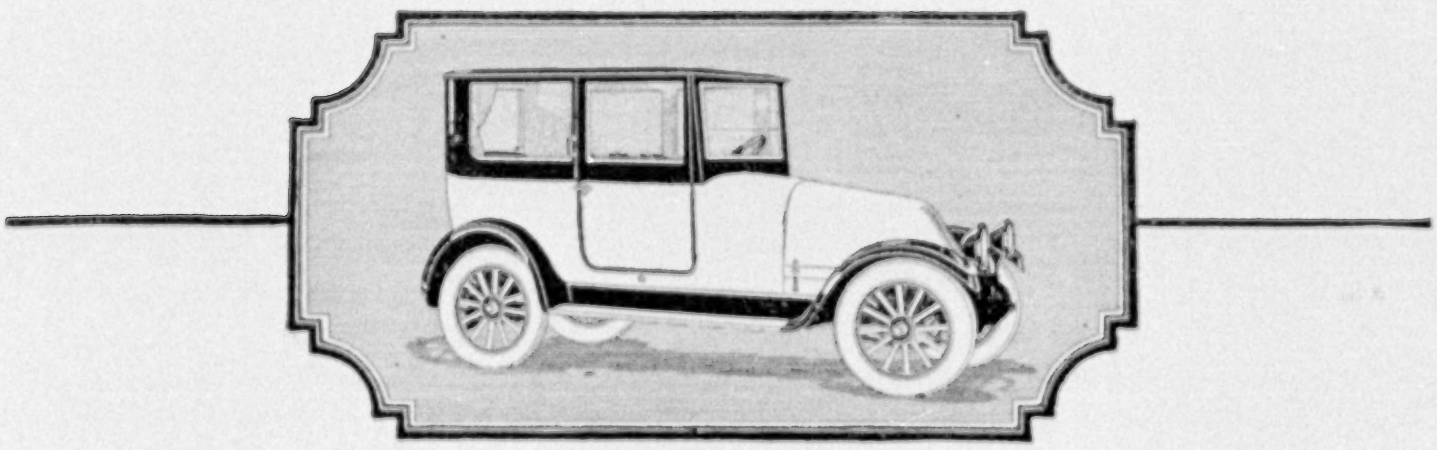

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By GILBERT GROSVENOR, Editor National Geographic Magazine

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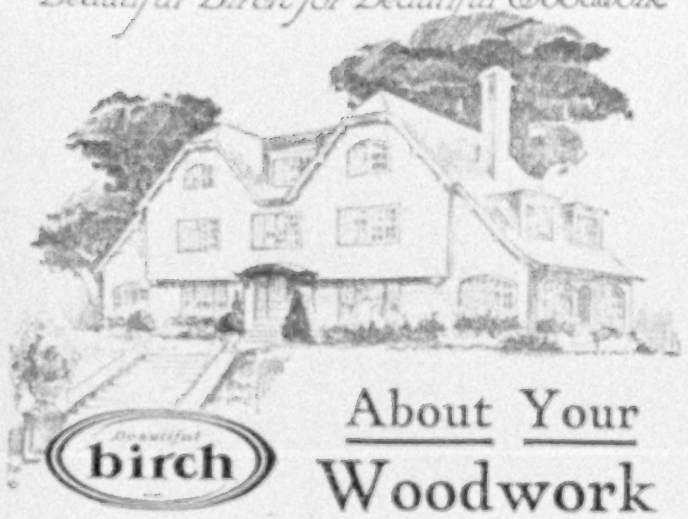

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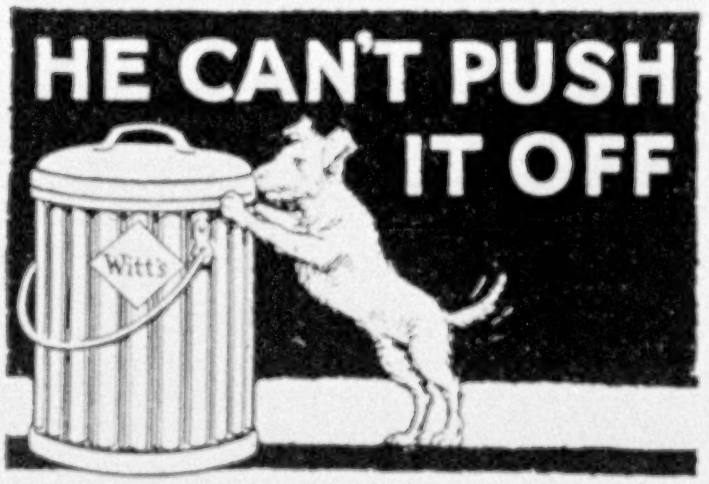

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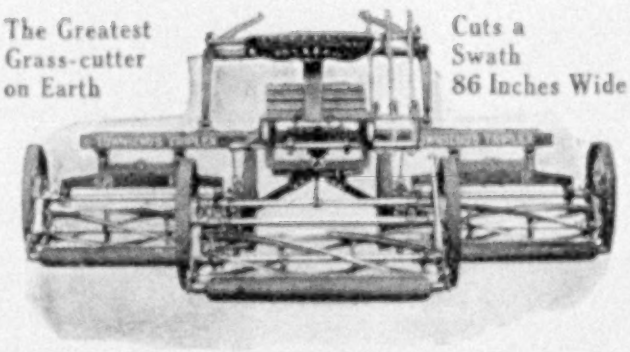

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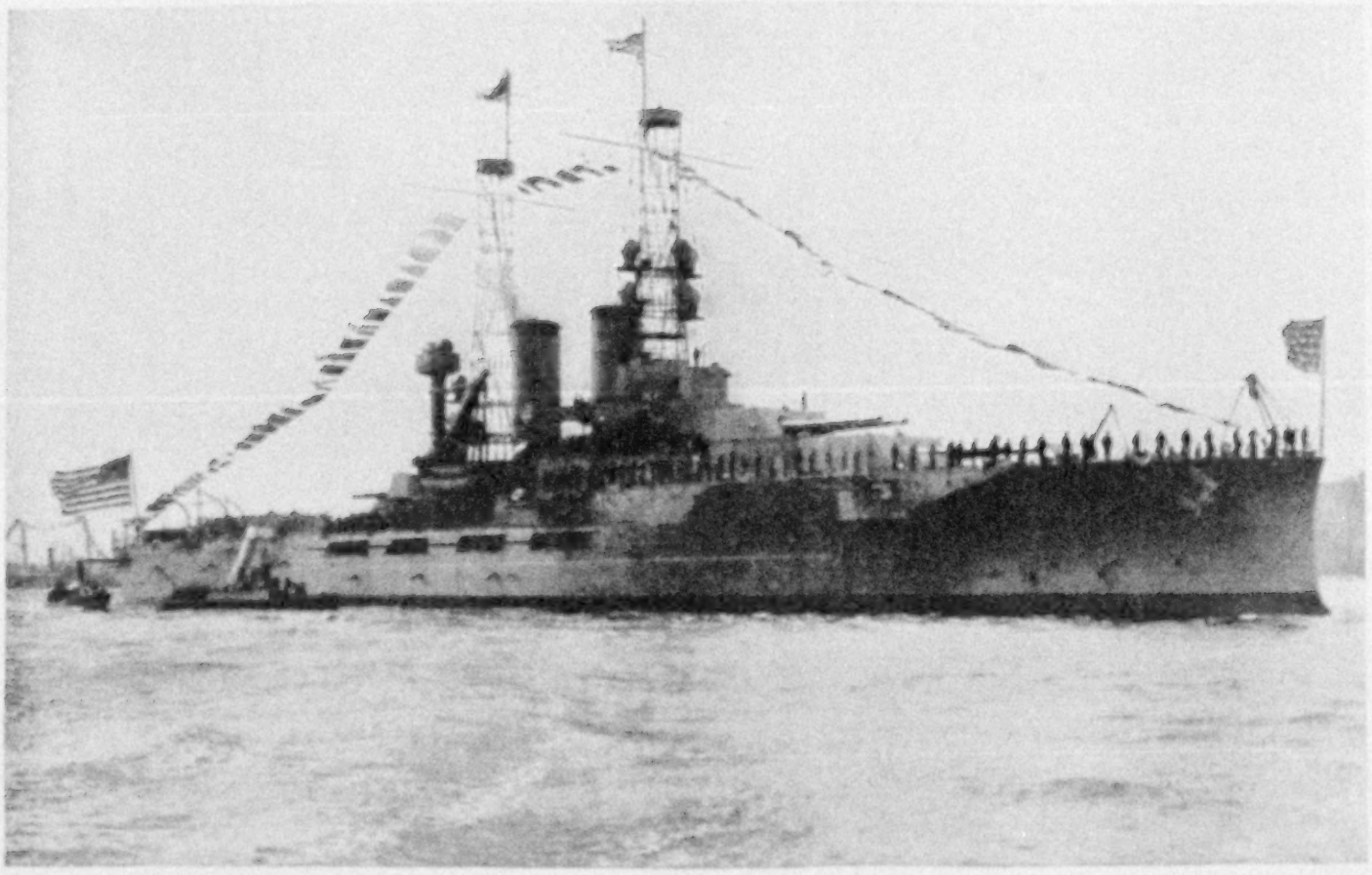

On Review

Flags of the World

By Commander BYRON McCANDLESS and GILBERT GROSVENOR

A HANDSOMELY BOUND VOLUME of 150 pages, containing 1,200 flags in their full colors, 300 illustrations in black and white, the complete insignia of the uniformed forces of the United States, the international flags in use on land and sea, together with an epitomized history of each flag, and an authoritative history of the "Star Spangled Banner." In this book there are published for the first time the flags of each of the forty-eight United States in full colors and with complete descriptions based on original research and approved by the State officials.

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An engaging chapter is contributed by F. H. Kennard on "Encouraging Birds Around the Home." Mr. Kennard persuades the reader to become a conserver of bird life, whether he be the possessor of a great estate or the owner of a window-sill.

That mysterious impulse which Nature has implanted in so many of her creatures—the migrating instinct—is the subject of a wonderful chapter by Professor Wells W. Cooke.

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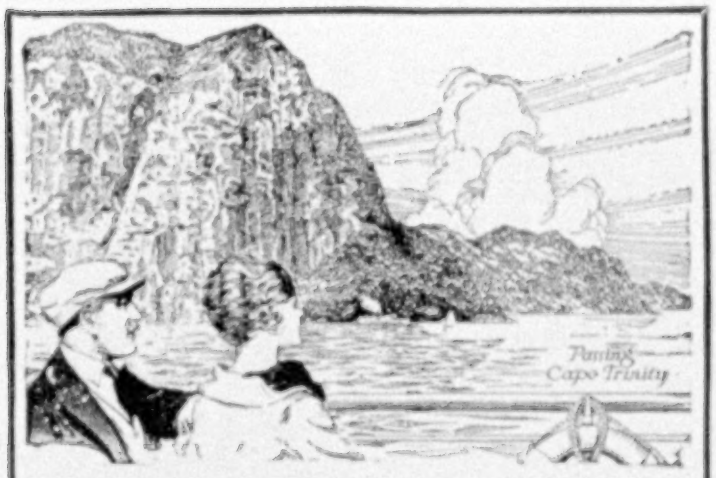

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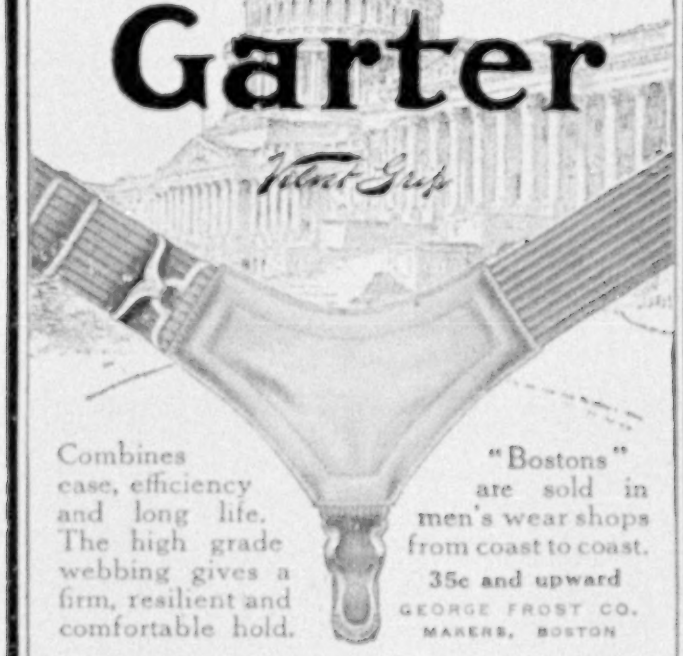

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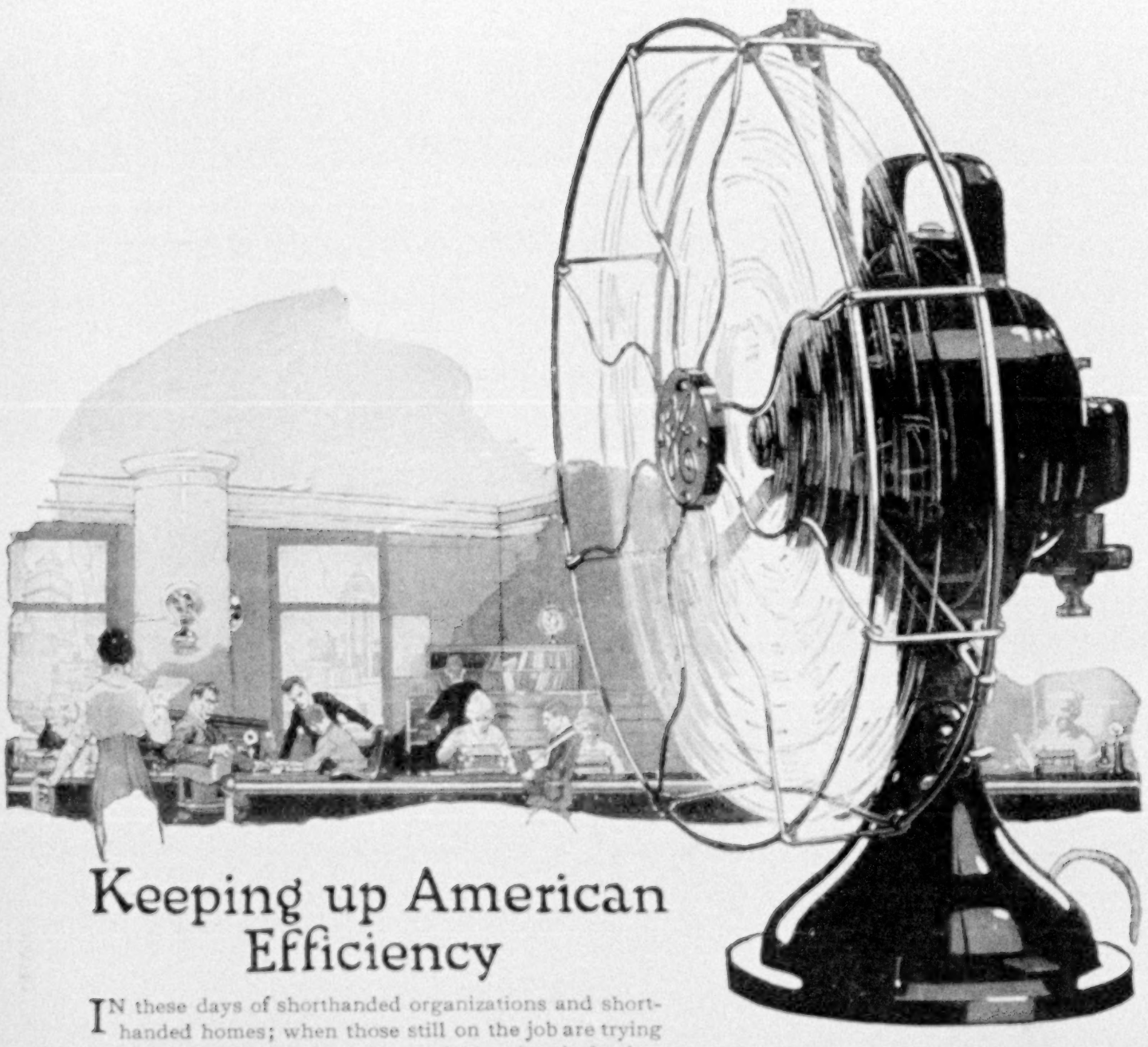

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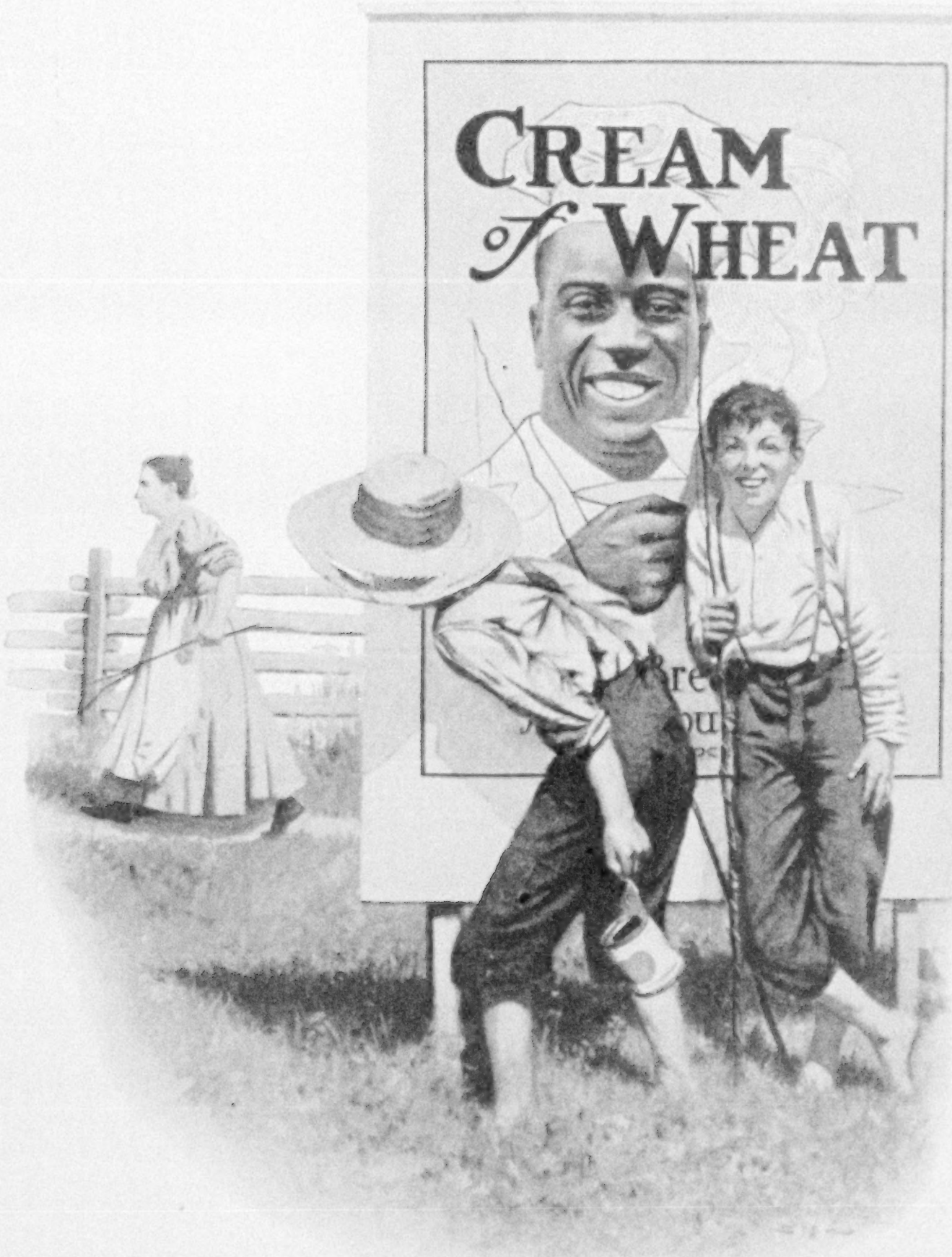

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